10th ANNIVERSARY
Unique games pack offer

THE MICRO USER

Volume 10 Number 1 March 1992 £1.95

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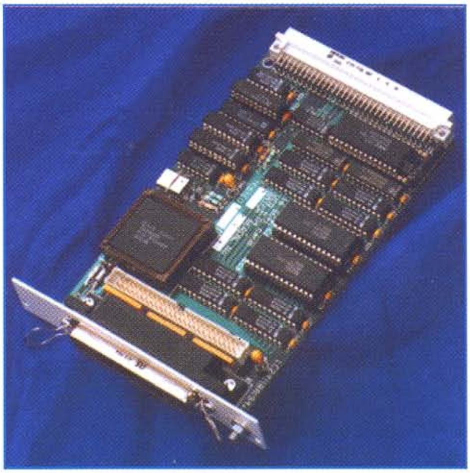
BBC A3000, Archimedes, BBC Micro and Master series

IN A PERFECT WORLD ALL INTERFACE CARDS WOULD BE MADE THIS WAY

...Morley Electronics new 16 bit SCSI Interface card is capable of supporting up to seven devices internally and/or externally on your Acorn computer.

...The SCSI system allows devices such as hard disc drives (fixed and removable), CD-Rom drives, tape streamers and scanners to be attached in a daisy chain on to one card. There are two cards available, a standard card and a *super fast* cached card.



...Our card is the **fastest available** for Acorn machines with the cached version being able to offer data transfer rates of up to 3.9Mb/s sustained and 6Mb peak. We are offering the card as either a separate item or bundled with one of the devices listed on the right.

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For Cached Interface please add	*£50.00*

...Our staff are always ready to answer any queries you may have about any of Morley's products especially concerning compatibility with your existing equipment.

* Please note that 300 series machines require a MEMC1A upgrade and backplane to be fitted, both available from Morley.

:0
SCSIDRIVE :4
SCSIDRIVE :5
CD-ROM
TAPEDRIVE
SCANNER

MORLEY
E·L·E·C·T·R·O·N·I·C·S · L·T·D

Control Software

Sparkle is a RISC OS compliant control package for the A3000 and Archimedes allowing full control of input, output and motor devices via most control boxes. Effectively Sparkle introduces the user to the world of control through a simple language which gives full access to control boxes as well as the ability to carry out data and frequency logging via analogue equipment. Inputs and outputs are simulated on screen and the package includes full counting and timing facilities. Numerous examples are included as are various exercises. Sparkle can control Deltronics, Phobox and Andi-Oddule control boxes as well as being the LEGO® dacta recommended control software for their Interface A control box. Please state control box when ordering.

Sparkle	**£59.00**
Sparkle for LEGO®	**£59.00**
Sparkle Site Licence	**£200.00**
LEGO® dacta Interface A Control Box	**£120.00**

Andi-Oddule

The Andi-Oddule is a low cost control box for the A3000 & Archimedes. There are eight input/output connections, four Analogue to digital inputs and one digital to analogue output. The box connects directly to an I²C connector (as found on our analogue & User Port interface) or can connect directly to a standard podule socket via an optional adaptor. The box can be controlled directly via RISC OS SWI calls or by using Sparkle control software (see above).

Andi-Oddule	**£49.00**
Optional adaptor	**£8.00**

Analogue & User Interface

Full specification BBC analogue & user port for the A3000. The analogue port is accessable using ADVAL from BASIC 5 with all BBC OSbyte calls support. *As supplied to Acorn Computers for their special; access A3000.*

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Morley memory expansion boards for the A3000 are high quality four layer boards and unlike most other cards can be expanded at a later date for maximum flexibility.

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Iptional PSU	**£9.50**
***BBC to Arc. upgrade**	**£35.00**

*(Adaptor needs to be sent to Morley)

A3000 Additional Drives

Both kits are easy to install and come with full fitting instructions. Basically the kits take the form of one new high quality drive, which you add to with your existing 3½" drive from the A3000. The 5¼" kit comes complete with power supply and interface. All cables are included.

3½" Kit	**£125.00**
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We are an authorised Acorn dealer and service centre and have been making peripheral devices for Acorn computers since 1985. We are the only dealer in the North East with dedicated Acorn demonstration facilities. We are also registered dealers of Star and Citizen printers. This advert only carries prices for our own products so please call if you wish to receive prices for equipment which is not advertised.

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Hardware

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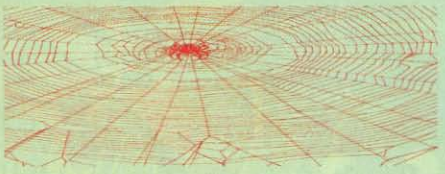
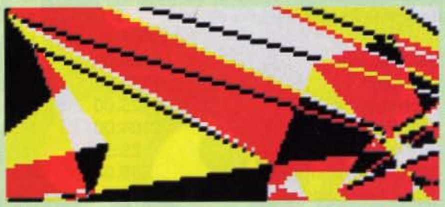
SPECIALS



52 **Arachnoids**
Can you complete the devious levels of this sophisticated type-in game? *



83 **Pointless lines**
A program without a reason? It's well worth experimenting with. *

109 **Digital clock**
Looking good: A simple example of how to have an onscreen time piece. *

Tenth Year CELEBRATION

WIN! WIN! WIN!

WIN the trip of a lifetime to Paris and the Euro Disney Resort for free. Or you could grab one of more than 150 other exciting prizes.

Turn to Page 24

A collector's dream

PEEP into the past with our History of the Micro User Games – and see how type-in listings have developed over the years.

Turn to Page 23

Look back in time

FIND out how *The Micro User* has reflected Acorn's glories and failures over the years and see what the future might hold.

Turn to Page 26

Answers for Charity

HELP us to help you – by filling in our annual Reader Survey. For every one you send us we'll donate £1 to charity.

Turn to Page 103

Type-it-in

This symbol * indicates that the feature contains at least one full length listing for you to key in on your micro.

Get it right

All the major listings in this magazine are accompanied by checksums to help you key them in correctly.

For full details of how to use them see the article on page 86 of the February 1992 issue

EDUCATION

29 **Update**
The latest details on new education products and events in the world of the Acorn machines.

33 **Reviews**
Catch our experts' views on the very latest products for home and school:

- Revelation 2
- Recall
- Yes Chancellor
- Save Planet Earth

Revelation 2

Recall
Edit Database Template
Use database
Graphs/Charts

Recall

Yes Chancellor 2
LEAVE DISC IN DRIVE WHILE PLAYING OR SAVING
Press SPACE or click MOUSE to continue

Yes Chancellor

REGULARS: News 13 ● Hac Man 87 ● Bo

Essential Archimedes

Make your learning curve even easier with our four how-to-do-it series for all Archimedes, A3000 and A5000 users.

55 **DTP**
Manipulate text to make your words shine.

58 **Spreadsheets**
Good presentation can make your figures come alive.

62 **Databases**
Find out just what can be achieved with PipDream 4.

65 **CAD**
Practice what's been preached in a real application.

LET'S COMPUTE!

Discover the basics of computer programming the easy way.

90 **Rom & Ram**
Learn how to place characters directly on the screen in BBC Basic. *

92 **Safe Scientist**
Sharpen your focus with lenses and our professor. *

NEWCOMERS

41 **HelixBasic**
Find out why we think this new version of Basic is really necessary.

49 **Flight Simulation Toolkit**
We get to grips with an exciting new package for designing games.

95 **CADmust**
Build computer circuits and produce automatic PCB layouts easily.

107 **Rhythm Box**
We check out a music product that's more than just a drum machine.

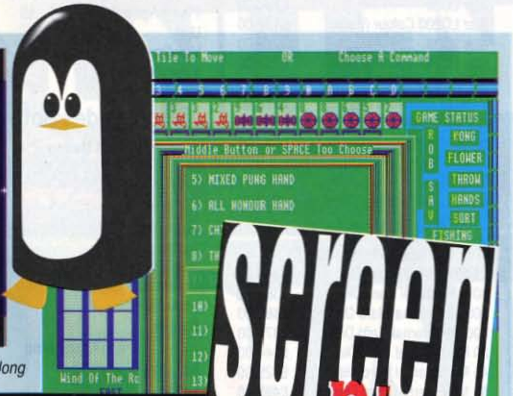
111 **Arachnid**
Control systems for the 32-bit machines from the 8-bit Spider people.

115 **Plus Wordwise**
Two fascinating extensions for the Wordwise Plus word processor package.

116 **Shorts**
Under the spotlight – clip art, a tracing package and a quieter fan.

SCORE
NEBULUS
T-592
LIVES

Nebulus



Mah Jong

FS
AS
FU
CT
LT
AL
ELITE

Elite

screen play

PRESENTATION

Our experts sift through the latest games releases plus a bit of ScreenChat from a newcomer. See page 45.

THE MICRO USER

Now! Subscribe for just £20

Yes, you can have a full year's subscription to *The Micro User* at a bargain price – check out this exceptional offer on Page 119.

On this month's subscription disc you'll find all the magazine listings relevant to your machine. In addition, those readers with a BBC A3000 or Archimedes series machine will also get:

- Killer for new viruses
- Tracker tunes
- Loads of new pointers
- Plus the best in PD software

– and you could win one of these!

Take out a subscription to *The Micro User* this month – or renew an existing subscription – and enter our fabulous contest.

The prize: The just-unveiled sensational Iota 3D Image Scanner, or the state-of-the-art BBC A3000. Full details on Page 119

Bargain basement .... Page 110
Hardware and software classifieds

NEXT MONTH IN THE MICRO USER

We explore Virtual Reality and Virtual Environments with one of the authors of Karma, supply a screen designer for Arachnoid and show how to design your own T-Shirts. There's all the regulars plus the PD Page full of great money-saving ideas

Building 98 ● PD Page 105 ● Problem Solved 112 ● Letters 121

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VIDC Enhancer	£29.00

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All monitors come with free lead. State type of computer when ordering.

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* comes with free VIDC enhancer.

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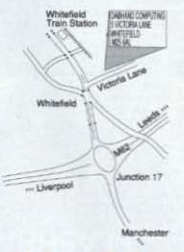

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2Mb Hard Disc Colour System	*Acorn*	£1499
– as above + Learning Curve		£1530

(Finance & special purchase schemes available)

MEMORY

Fitting extra unless otherwise stated

† Fitting easy ‡ Fitting needs expertise

A3000 2 Mb Non-upgradable †	*IFEL*	£55
A3000 2 Mb Upgradable †	*IFEL*	£63
A3000 4 Mb †	*Atomwide/IFEL*	£149
A310 2 Mb Upgradable soldered ‡	*IFEL*	£99
– as above + MEMC1a		£149
– as above + MEMC1a + fitting		£200
A310 4 Mb soldered + MEMC1a ‡	*IFEL*	£225
– as above + fitting		£277
– as above + fitting + OS3 carriers		£298
A5000 2 - 4 Mb Upgradable †	*Atomwide*	£109
A5000 2 - 8 Mb including fitting	*Atomwide*	£500
A5000 4 - 8 Mb including fitting	*Atomwide*	£391
A540 4 Mb †	*Atomwide*	£268

MISCELLANEOUS

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9070S Monitor	*Eizo*	£640
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ARM3 ‡	*Atomwide*	£249
Clares Micro Mouse	*Clares*	£26
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FaxPack	*CC*	£289
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Bubble Jet BJ-330	*Canon*	£405
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– with optional 250-sheet cassette		£999
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– A3000 internal	*CC*	£199
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NEWS BEAT

Show stopper

ACORN launched a product with a difference at the BETT '92 show – Acorn Replay, a low-cost full motion video system designed by Acorn guru Roger Wilson.

Supporting simultaneous audio and video, this system will run on your Archimedes at up to 25 frames a second in real-time with an Arm 3, or 12.5 frames a second with an Arm 2.

It needs 2Mb of ram and runs in a quarter-screen sized window on the Desktop, or in full screen mode.

It differs, and supersedes, other FMV systems such as Apple's QuickTime as it reads highly compressed data from CD Roms and any other media in real-time without additional hardware.

The sound channel is synchronised perfectly, unlike QuickTime, so you can combine the low-cost processing power of the Archimedes with the relatively cheap mass storage to produce a true multimedia system

One particularly nice feature is the data compression technique which relies on calculating the redundancy between successive video frames.

You can stop the video when and where you want, enabling you to grab a frame for pasting to another application such as a DTP document.

Anyone with a CD Rom drive can use Acorn Replay, while Acorn themselves are working with third-party software houses who are developing their own applications and a library of video clips. The first of these are due in April.

News flash

BULLETIN is a bulletin board communication system for machines supporting Econet, available from XOB (030 784 364). It allows you to send electronic messages ranging from a discussion of ideas to final plans. Messages can be left and replied to at will and you can restrict access.

Priced at £67, Bulletin is a sophisticated system which will work on any Archimedes connected to an Econet network. Just click on the Bulletin icon on the icon bar and a window will open display general messages.

You can scroll through the text in the usual way and each message is data stamped as well as showing the sender and intended recipient.

It supports up to 20 simultaneous areas and all files are encrypted allowing closed user groups. People with access to SJ Research's MDFS have extra levels of security available.

The options are all configurable so you can decide the number of boards in use, their titles, log the accesses, define boards as read only, as well as decide the type of Econet system being used.

You can add your contribution using the usual methods. With up to 1,500 users able to access one system it should keep you busy.

PC or not PC?

AS emulators go there are a lot worse than the Archimedes' PC unit. However, with PC applications requiring more ram and faster processors, the Archimedes as a PC emulator was starting to struggle even with an Arm 3 chip.

Acquiring more ram and hard disc space is relatively easy, but the emulator is a different problem altogether.

To the rescue come Watford Electronics (0923 237774) and Aleph One (0223 811679) with expansion cards. Contrary to the original specifications neither runs via Acorn's PC emulator, but both provide 386 performance with 1Mb ram which can be upgraded.

Watford's own PC range has been extended to create the Aries PC Card which is still under development and will be priced between £400 and £500.

It uses a 25MHz AM386SXL processor which gives high speeds and there is a socket for an optional 387SX floating point chip if required.

There is VGA support which, providing you have the right sort of monitor, will give a multi-tasking display on the Risc OS desktop or full screen display using an Archimedes multisync monitor.

Specifications for the Aleph One card are very similar, with an Intel 386SX compatible processor running at 20MHz. Price, £495 – £100 less than initially thought.

The same card is available for all Archimedes models, although A3000 owners will find that they need a box to put it in as it sticks out of the back of the machine.

Aleph One also promise a series of optional software extensions including: Microsoft Windows driver, disc cache, Novell network and Risc OS printer support as well as a RM Nimbus emulator. There may even be direct data exchange between PC and Archimedes software.

Both cards mean that you have a computer within a computer. With full background disc access, the Archimedes is left alone leaving you to work on AutoCAD, Microsoft Word, dBase, WordPerfect and Lotus 1-2-3 and so on, as well as on your Archimedes applications.

Safe and sound

ANYONE who has been to a computer show will have seen the computer peripherals stand with a giant teapot pouring liquid over a keyboard. We all know that we shouldn't have liquids near our computers, but the urge for caffeine usually wins.

Now Edu-Key (0225 469194) have produced a Keyboard Glove. Available for a whole range of computers the one for the BBC B fits snugly over all the keys.

It is made of strong polyurethane, and adhesive strips ensure that it fits snugly in place. Edu-Key promise that it won't crack, yellow or become brittle over time.

In addition, Edu-Key sell their Keyboard Gloves with a set of lower case stickers for £29 – something that primary school teachers have been requesting for years.

Used in the Gulf by the Allied Forces as well as in industry, it seems a good way to protect your keyboard.

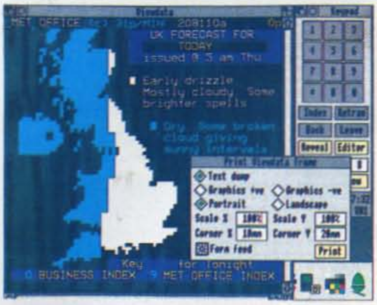
Mini pin

PINPOINT has spawned a baby brother, Junior PinPoint. Available from Longman Logotron (0223 425558) for £24, it is aimed at primary education and has easy-to-follow instructions.

The package has been somewhat simplified and is easier to use, but Longman have tried to keep the sophisticated and powerful features of PinPoint intact. There is some curriculum-focused documentation.

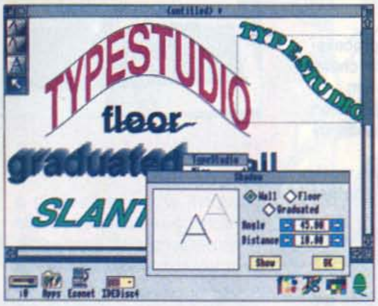
RISC Developments Software

Hearsay II


MET OFFICE
UK FORECAST FOR TODAY
issued @ 5 am Thu
Early drizzle
Mostly cloudy. Some brighter spells
Key for tonight
0 BUSINESS INDEX 9 MET OFFICE INDEX
Index
Retrn
Back
Leave
Reveal
Editor
Text dump
Graphics
Portrait
Landscape
Form feed
Print

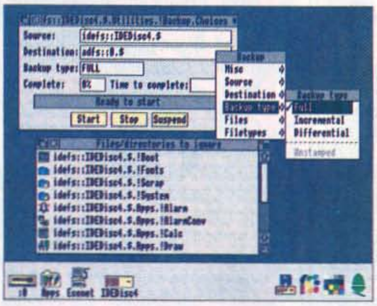
Hearsay II is the latest development of the highly acclaimed Archimedes communications package, Hearsay. It is multi-tasking and RISC OS compliant, and provides more advanced features in an even easier-to-use package. It is ideal for use with Prestel, Telecom Gold, Campus 2000 and Compuserve, and also provides very high quality VT320, VT102, VT52 and Tektronix 4105 Colour terminal emulations for direct connection to mini and mainframe hosts. In addition it gives access to Minitel systems such as the French Teletel service. Other features include Xmodem, Ymodem, Zmodem and Kermit file transfer, comprehensive script language and auto-dial number directory. Hearsay II supports most popular modems, including Hayes, DTI and SM2400. **Price £75 + VAT**

TypeStudio


TYPESTUDIO
TYPESTUDIO
floor
graduated
SLANT
Wall
Floor
Graduated
Show
OK

TypeStudio is a complete text manipulation package ideal for producing professional quality adverts, posters, banners, logos, letterheads etc. Drawing tools allow lines and curves to be drawn,, along which text can be flowed to follow any shape. Pairs of lines may be linked to create shapes into which text and Draw files may be moulded. A wide range of special effects are available, including: shadows, slant, mirror, 3D, plinth and column. Your designs may be printed directly from TypeStudio, or exported as Draw files to other applications. The TypeStudio package includes 7 fonts and a 64-page user guide containing many worked examples with step-by-step instructions. No other Archimedes package provides all these features in a single easy-to-use package. **Price £45 + VAT**

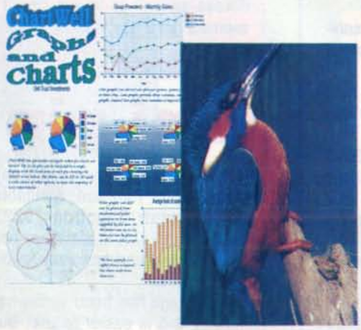
Hard Disc Companion II


Source:
Destination:
Backup type: FULL
Complete:
Time to complete:
Ready to start
Start
Stop
Suspend
Files/directories to ignore
Backup
Misc
Source
Destination
Backup type
Files
Filetypes
Full
Incremental
Differential

Version II of this hard disc backup program is a vastly enhanced version of the original program, re-written to make it twice as fast and even easier to use. It provides a structured approach to the backing up of hard drives, and the recovery of files in the event of disc failure or accidental file deletion. Both Full and Incremental backups are supported, and the files to be backed up or ignored may be specified using simple drag operations. The entire backup specification may be saved in a script file for use at a later date. Hard Disc Companion II uses an efficient compression system to backup as much data as possible onto the floppies without increasing the backup time. Separate applications are included to restore entire backups or just selected files. **Price £45 + VAT**

Colour Printer Drivers

NEW


ChartWell
Graphs and Charts

The PrinterDJ printer driver produces near laser quality output from the highly acclaimed Hewlett Packard DeskJet 500C colour printer. It is a release 2 driver and supports 75 X 75, 150 x 150 and 300 x 300 dpi print resolutions in monochrome, grey scale and full colour modes. Release 3 driver for the A5000 and RISC OS 3 available soon. **Price £15 + VAT**

The PrinterLC driver is the approved printer driver for Star colour dot-matrix printers. It is suitable for both 9-pin and 24-pin colour printers e.g. LC24-200, LC-200, XB24-10 and LC-10. PrinterLC is a release 2 driver, supporting various print resolutions from 60 x 72 dpi to 360 x 360 dpi depending on the printer model. Also suitable for many Epson and NEC colour printers. **Price £15 + VAT**

RISC Developments Ltd. 117 Hatfield Road, St. Albans, Herts. AL1 4JS Tel. (0727) 40303 Fax. (0727) 860263

DTP for pros

ACKNOWLEDGING the award-winning Impression II this month are Acorn themselves. With Computer Concepts, Acorn have launched a professional, but low-cost DTP solution.

For £4,995 you'll get Impression, a professional image scanner and direct drive high resolution laser printer, all running on an A540 with Arm 3 and 4Mb of ram, plus a 120Mb SCSI hard drive and 14in multiscan monitor.

The software also includes a copy of Equasor – an equation editing program, as well as a set of the Business Supplement including utilities to import files from WordPerfect, Microsoft Word and WordStar. Further utilities allow you to mailmerge, produce Postscript files and colour separations.

Designed for design

DESPITE the abundance of excellent art packages for the Archimedes, multi-tasking CAD packages are fewer on the ground. Minerva (0392 437756) hope to address this situation with two 2D packages for general and professional use.

CADet, at £149, is aimed at both education and businesses needing a fast 2D draughting package. It allows multiple drawings, a user-defined symbol library and architectural and ordnance survey fills. And you can import or export drawings as draw files and ouput to HPGL plotters or standard printers.

ProCAD is under development for the professional. It also allows multiple drawings, with the ability to support 32 layers of drawing, auto-dimensioning with powerful zoom and pan facilities with a continuous measure feature, vertical and horizontal rulers and isometric or rectangular grids.

German Acorns

KLEIN Computers (010 49 6142 81131) are about to release a sophisticated graphing program for the Archimedes called Funktionsplotter which operates on functions with one or two unknowns.

For instance should you have the equation y=f(x) with one unknown, you can draw a variety of graphs with configurable x and y coordinates and automatic calculation.

Should you have a function such as z=f(x,y) you can create a 3D display and calculate the hidden surface all of which can be viewed from a variety of angles.

Other products coming include MasterMon. Again for the Archimedes it is a multi-tasking disc monitor and back-up program. It allows you to edit the discs, and you can also mark tracks as faulty. In addition you can save a disc as an image which is useful for anyone making master discs.

ModeMaker gives you access to new screen modes to make the most of your hardware – monitor and Archimedes. G-Draft is a 2D graphing program targetted at technical drawing applications.

You can have drawings as large as A0 with a resolution of 0.0001 at 1:1. The use of layers allows you to work at more than one level with true to life line thicknesses and a choice of eight pens.

Learning the ropes

ACORN are offering a selection of computer training courses at three regional venues, Surrey, Manchester and Durham, in addition to the company's purpose-built unit in Cambridge.

The courses, which start in April, will initially deal with the use and management of Econet networks. Previously such courses were only available in Cambridge, and the regional ones should reach more people. Administration and bookings will still be made through Acorn (0223 245200).

For the hard of hearing

BARNARDOS (081-550 8822) have developed a range of software for children with profound learning disabilities. Available for the BBC B and Master, I Can Do It is the conclusion to a three-year joint research project.

Using sight, sound and touch, the program makes important use of music. Two of the series, Swans and Cygnets, were devised as a result of a child's reaction to Swan Lake.

Using a single switch you can make the swans or cygnets swim across the screens in either direction accompanied by the music.

The same idea is used in How Much is that Doggy in the Window? – again using a single switch to wag the dog's tail. Later programs introduce the idea choice through the use of two switches.

Creator Malcolm Hind, the head of Computer Education at Edge Hill College, tested the programs at the Barnardo's projects in Liverpool, St Annes and London as well as in schools in Scotland, England and Holland.

Catering for all ages and abilities the 14 routines vary in content and complexity using touch screens, switches, concept keyboards and joysticks.

Catch the express

MIDNIGHT Graphics (061-766 8423) have created Express, a new graphical manipulation package for the Archimedes. It is simple to use and allows text and objects to be presented in a variety of ways.

Text is automatically placed in an envelope, but is fully editable at all times. There are more than 760 standard fill colours, and sprites can be used as fills which can be tiled or scaled.

Shadow can be added in three ways – Shadow, Zoom or 3D leaving you to choose the colour of zoom and 3D steps as well as their number.

Text can be made circular – either clockwise or anti-clockwise – and a large range of envelopes is provided.

You can generate polygon envelopes or stars, while plinths can be created to match text. Priced at £51.02 , it is due for release any time. Two other utilities about to hit the streets are Retrieve and AltViewer. The first is a multi-tasking hard disc back up system.

There are quite a few on the market, but £25.49 will get you user definable source and destination paths, a file exclusion feature as well as a graphical display of files in a window.

Working in the background it allows you to schedule backups and compress data as you want.

AltViewer at £8.47 helps you navigate around the directories on your disc – especially useful when files are embedded in multiple levels of directories.

Just drag a directory on to the application and it will open the corresponding window in the relevant filing system and you have instant access.

Prize bloomer!

A special offer for subscribers which was published on pages 131-132 or the February, 1992 edition of *The Micro User* is being repeated this month following problems with the original offer.

The offer gave readers who took out a new subscription or renewed their existing one the opportunity of winning either an image scanner or a new BBC A3000 machine.

Due to a production oversight, a question which should have accompanied the competition was omitted from the entry form. The prizes connected with the February issue offer have not been allocated and are carried over to this month.

All readers who applied to enter for the February issue prizes have been contacted. *The Micro User* apologies for any inconvenience this has caused.

To find out how you can win this month turn to Page 119.

What our readers say

...I would like to congratulate the publishers of RISC User for producing an excellent journal, the presentation of which is neat and stylish and the content lively and informative...I think that now you have achieved a good balance between articles for the novice and advanced user...

K. Gomm

...I find your magazine to be the best available for the Archimedes range of computers, and I am sure I have obtained far more information about the workings of these machines than all the others I read.

D.A.Symes

...I must commend you on your most excellent publication that keeps my interest at all times.

N. Dennigan

...RISC User provides additional information not frequently covered in less specialised magazines.

M.Rozdoba

...I find the Technical Queries and Hints &Tips extremely useful - they have helped me unravel many a problem. Keep up the good work!

P.J.Matthew

...Congratulations on your articles for beginners, we could certainly do with more of them.

J.H.Luxton

...I wish to congratulate you for the continued excellence and highly interesting nature of your magazine, and sincerely hope that you will be able to maintain these standards for a long time to come.

S.J.Hasleton

RISC User

the most popular subscription magazine devoted to the Archimedes, A3000 and A5000 computers

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RISC Developments, 117 Hatfield Road, St. Albans Herts AL1 4JS

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Following glowing reviews in the computer press ...
... a new version of* DeskEdit *(V 1.20)
has now been released

Acorn User
...offers much to the user... a good deal of thought has evidently gone into its development...
... a worthwhile upgrade from Edit

Archimedes World
...replete with well thought out and flexible features... very attractive... remarkably inexpensive for what it offers... should prove very popular.

Archive
...a wonderful piece of software... deserves to be on everyone's icon bar... Acorn would do well to provide it free with every machine it sells... so much (is provided) that you wonder how you managed before.
...macros are...a boon and of great value when writing a program... a truly marvellous set of page and printer control options are included... Everything I wanted was there with clear instructions for use.DeskEdit is a must.

with even more features for text editing and word processing tasks, Basic and C source editing

A new ***single key save-and-run feature in Basic mode*** permits virtually instantaneous testing of programs and applications as you edit them.

The ***improved procedure and function browser*** now lets you browse in both directions

In text mode, ***wordwrap control*** is improved, while in ***C mode syntax checking*** is extended, and a special Search option lets you search for function definitions.

Other ***new features*** are: • dynamic date insertion • Left and Right Justify • bracket matching • Align Columns and • the Char Info option.

DeskEdit

is the ultimate all-purpose editor for the Archimedes, with special features for plain text, Basic and C source.

Edit your Basic programs on the desktop and test them interactively with a single key press.

DeskEdit + a 48 page manual + a function keystrip
Price **£24.95** inc + £1.50p&p Code **PEDTb**

Existing users may upgrade to V. 1.20 by sending their original disc, together with £2.00 and SAE marked **DeskEdit Upgrade 1.2.**

ChartWell

A sophisticated Graph and Chart Package

ChartWell offers **24 different graph types**: horizontal and vertical bar charts line graphs scatter charts polar plots and pie charts.

Data can be imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

Output is in standard Draw format for import into Draw or any other application, DTP for example.

A variety of display options:
flat or 3D bar and pie charts,
user choice of angle for 3D pie chart display,
clustered, stacked or layered bar charts,
scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars,
line graphs with choice of normal, cumulative area or stacked area displays.

Complete user control over:
choice of colour,
data point styles,
bar widths and spacing,
use of titles and labels,
legends to provide a key,
graduated/shaded backgrounds,
scales and tick marks, etc.

Use of **'style sheets'** allows a set of options to be saved with data for future reference. User choice of start-up options.

A single chart or graph can **display up to 6 different data sets**, including up to six pie charts in a single display.

Flexibility - you can select only part of the data for display, or change the order of display - i.e. whith bar charts data can be arranged in ascending order.

Chartwell and manual
Price **£29.95 inc** +1.50 p&p
Code **PCHWa**

RISC Developments Ltd. 117 Hatfield Road, St Albans, Herts, AL1 4JS. Tel. 0727 40303 Fax 0727 860263

SEIKOSHA SP-1900Plus
SEIKOSHA

Faster impact

THE SP1900 is a new entry-level 9-pin printer from Seikosha (0204 848444). Priced at £155, it outputs up to 192 characters a second in fast mode, 160cps in draft and 40cps in NLQ.

It is fully Epson FX850 and IBM Proprinter II compatible and is able to handle a variety of paper types from A4 to multi-part stationery and label printing.

There is a semi-automatic sheet feeder and switchable push tractor feed as well as paper parking, end detection and short tear off facility. You could opt for the fully automatic cut sheet feeder.

The control panel as been designed with simple touch buttons for comprehensive function selection.

DTP companion

FOLLOWING the success of First Impression, Word Processing – who can be contacted at 65 Milldale Crescent. Wolverhampton, West Midlands WV10 6LR – have released Good Impression.

Showing you what is possible using a variety of packages as well as how to achieve each effect, the book concentrates most on what you can achieve with Impression II from Computer Concepts.

With nearly 200 graphic ideas and detailed instructions, it explains and demonstrates new techniques. In addition all the graphic examples are supplied on disc so you can experiment.

Its 13 chapters cover headers, borders, dingbats, superimposed text, drop-caps, word squares, shadows and tints and much more.

There is also a section on stationery with master page templates supplied ready to use including a letterhead, compliment slip, timetable, curriculum plan, weekly forecast, customer order and invoice.

Priced at £26.95 it looks like the ideal companion to First Impression.

Safe, sure, secure

IF you ever find yourself lost for words take a look at a new program from Risc Developments (0727 40303). The Desktop Thesaurus costs £19 and is available this month for the Archimedes.

With over 11,000 keywords and nearly 90,000 alternatives is should be equally useful in classroom, office and home.

Fully multi-tasking, the thesaurus can be expanded by adding your own words. However, the files have to be decompressed to allow you to do this, which means that 1Mb ram users will not be able to use this feature.

Adventure in the Holy Land

GOOD news for BBC owners comes in the form of a simple adventure game called the Damascus Reporter. Aimed at 11 to 14- year-olds it is set in the world of the early Christians.

In it you are a reporter for a newspaper and a young pharisee, Saul of Tarsus, is organising a vicious persecution of a group known as Christians – or is he? It is up to you to find out exactly what is happening.

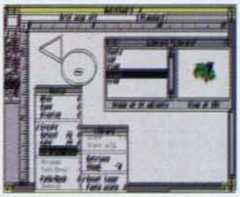
Priced at £15 it is available from Appian Way (091-373 1389).

Plus a few steps

THE PD program DrawPlus has many converts throughout the Archimedes world. Now its author, Jonathan Marten, has produced a new commercial drawing package called Vector which is available from 4Mation (0271 25353).

It is due out later this year and the price will be around £80-£90 with a free site licence.

It covers replication, masked objects, radiation, path merging, interpolation and rotation and promises to take DrawPlus quite a few steps forward.



Making its mark

The ability to save as normal draw files or compressed files seems an advantage over a standalone compression program, while accessing frequently-used objects via a compressed library is something a lot of people will find very useful.

Another 4Mation product under development is a sprite animation package, Masque, which is also due for release later this year.

The sprite names are entered in a rota box in the order you want them to be displayed. Pop the first and last sprite in position and let Masque automatically position the sprites for the sequence.

You can scale sprites to give a 3D effect, flip them horizontally and vertically and put one sequence in front or behind another.

You can add pauses, text and music – a library of tunes is provided – and all can be saved in a compressed form .

SmArt users will be pleased to hear that that a host of new files is available: Dolittle provides range of animal faces, Talk lets you create a selection of talking heads in different settings, while with Unwanted you can create your own wanted posters.

Sentiment is a library of 30 expressions and a selection of scenes, Aliens a self-explanatory file of a mixture of cuddly and ghoulish characters and Modern Languages are available in French, Dutch, Portuguese, Spanish, Turkish, Italian, Greek, Hebrew, German.

These come on two discs. One illustrates meals and the other a collection of items on shelves. Leisure, Homes and Faces packs are also on the cards.

In brief

INTEGREX (0283 551551), well-known for their colour printers, are now selling a 300dpi monochrome inkjet printer for only £199. The BetaJet is a high resolution A4 monochrome unit costing the same as a 9-pin dot matrix but giving laser quality. It has an 8k buffer and produces up to two pages a minute quietly.

BANNER from Kudlian Soft (0926 55538) is a new and simple application which prints large wide banners using Acorn's Outline Font Manager. Price, £15.

SPACE is always at a premium, and PRES (0276 72046) have a piece of hardware which could help. The SPACE kit – or Second Peripheral Auxiliary Chassis Expansion – lets you fit a second hard disc drive inside an A400/500 series Archimedes.

Complete with metalwork, cables, instructions and fittings, it is fitted in the SPACE chassis and sits where podules one and three are usually found.

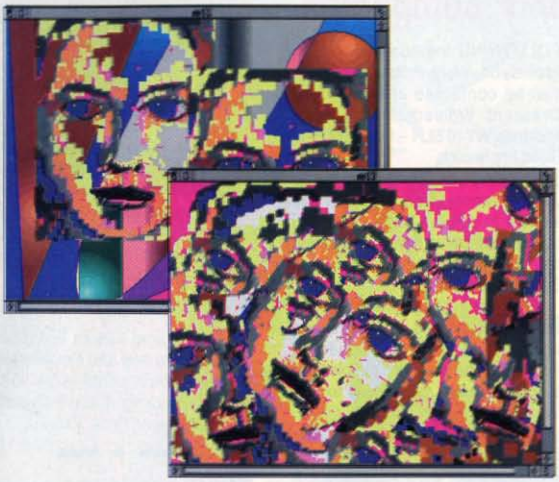
Power is connected via a cable/splitter. Data cables are provided so you simply plug into the existing drive sockets on the motherboard, though it is probably best fitted by a dealer.

Up to 40Mb of extra storage can be added with larger drives fitted with an external power supply. The kit costs £32.95

ACORN have appointed EMCEE Distribution (Dublin 522811) as their sole distributors in the Republic of Ireland. They can be seen at Comptex – Ireland's largest computer show – at the end of March.

There are also plans for EMCEE to organise roadshows throughout Ireland as the Acorn range – which is widely used in Irish primary schools – is used increasingly in secondary schools.

A NEW version of 4Mation's (0271 25353) Chameleon is due for release later this year. Now with colour fills, it will carry a nominal upgrade charge for registered users.



Rolling on

COMPUTER graphics enable even the least talented to create interesting and unusual pictures, but for a group of sixth form students from Enfield, London, the electronic easel was used as an intermediary stage in developing understanding of design processes.

The Altered Images Exhibition now on at the Design Council is the culmination of the project initiated by Kevin Mathieson and Enfield LEA.

Initial sketches were drawn or taken from photographs after visiting art galleries to study the ranges of styles open to them. Then ProArtisan from Clares was used to create and refine their ideas.

Work was taken on into the design of banners and larger pieces of art, but to show the progression of the designs a medium more vibrant than the Integrex colour printouts was needed.

Acorn Computers stepped in at this stage. By loaning the Design Council computer equipment they enabled the students to display their work. With Picture – a sequential display application – they showed the progression of the designs in a rolling demonstration. The show will be open to the public until the end of the year.

Portable unwrapped?

RUMOURS are rife – yet again – about a new Acorn baby. About a year ago the market was buzzing with news of a portable Archimedes. Rumours and conjecture disappeared after what looked like an Acorn kite-flying exercise. But they're back and an Acorn spokesman has confirmed that 1992 will see the launch of a portable ARM-based micro.

That is the limit of the hard facts at present. Local Education Advisers did see the new machine at the recent Bett '92 show, but are keeping quiet due to a non-disclosure agreement. Not even Key Developers have seen the new machine yet – which suggests there'll be no surprises in the software.

Looking at the market as a whole, and at the A5000, it is possible to deduce some of the specifications of this portable. The fact that it was shown to the LEAs now could mean that Acorn are planning to release it for the new school financial year which, due to Local Management of Schools, now starts in April.

But the reason for the selective pre-release could be that the machine will not be ready for April, so Acorn want to make sure that schools don't spend all their budget before the launch proper.

With the Department of Education and Science planning to give grants for schools to use portables it was only a matter of time before Acorn produced their model to compete with the establised PCs and new Nimbus and Apple Macintosh models.

Portable is a name which covers a variety of machines from 2lb palmtops to back-breaking luggables which need mains power. In the PC and Apple Macintosh markets the LCD-display laptop is the most preferred model being light enough to carry around and versatile enough to use in an office with additional hardware.

It ought to have a trackball rather than a mouse. However, if this is a luggable then a mouse is more likely – again for price considerations. Comparisons with the other possible competitors on the general market would probably mean that it would have 20Mb hard disc – IDE for the best size and price – and a 3.5in quad-density floppy drive.

The amount of ram is arguable because Risc OS 3 is having problems fitting into 1Mb at present, so we'll have to wait and see. Dare we say that this could also be the cause of the delay?

Connectivity is often the key to successful portables. All the standard ports should be available: Parallel printer, serial, Econet and a separate monitor output. Let's hope Acorn don't cut corners here.

The price is more difficult to predict, but with good quality portable 386SX PCs selling for under £1,000 it should be in this range.

Though targetted squarely at the education market the existence of a portable lends credibility to a range. And there are a large number of Archimedes users who would snap up such a machine so that they can take it to work.

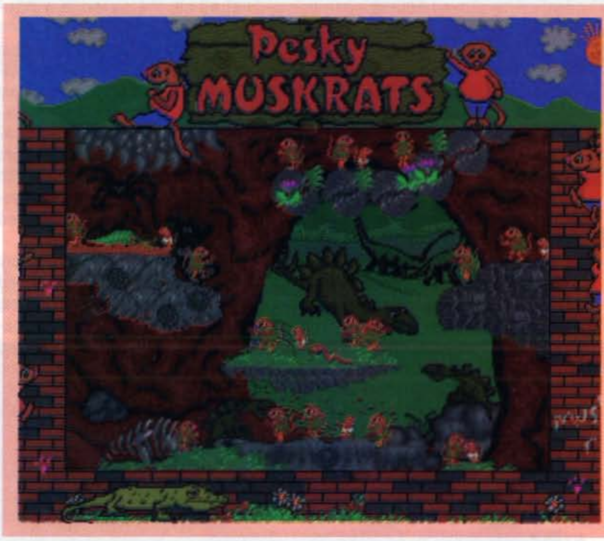
Watch this space.

Newcomer

STEPHEN KETT has founded a new entertainment software house based in Barrow-in-Furness. They are developing games themselves as well as taking in submissions from other Archimedes programmers. The games are being marketed under the Image Software label. Image can be contaced at Sowerby Wood Industrial Estate, Park Road, Barrow-in-Furness, Cumbria LA14 4BG.

Hot on the heels

KARMA authors Periscope Software have opened two new telephone hotlines. So if you want to call them for sales and enquiries ring 0272 767854 and for technical questions – once you've started playing – try 0839 668811.



Pest control

NEW software house Coin-Age (0282 692688) have released their first game, Pesky Muskrats. Only available for the Archimedes at £25.99 it promises to be a colourful and exciting program.

Your previous dealings with muskrats may be limited to old showings of Deputy Dawg, but these little beasties from Coin-Age are much more prolific. Not only do they get everywhere, but their population can double or treble at the flickering of a pixel.

You are in charge of one crateload of the clever darlings, and it is you who must get and keep them under control against all the odds. Are you up to it?

BEEBUG The Archimedes Specialists

A3000 Hard Drive DTP System

If you have been thinking of getting an A3000 there has never been a better time.

This special offer provides an excellent system ready for immediate use. The hard drive, RAM and Ovation are all installed ready so you can simply turn on and start.

Ovation is the highly acclaimed package combining word processing and DTP. Widely used in education it offers a whole host of features and is powerful and yet simple to use.

Our high speed IDE drive was designed especially for the A3000. It has an access time faster than ST506 or 8 bit SCSI, features auto-parking and sleep mode and is fitted in the internal expansion slot.

☐ Acorn A3000 Computer
☐ Genuine Acorn Colour Monitor
☐ Monitor Plinth
☐ 2 Mb RAM
☐ 20 Mbyte Internal Hard Drive
☐ Ovation DTP

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The A3000 Learning Curve is also available if required. This includes Pacmania & Lemmings games, Genesis II Database, 1st Word Plus, Acorn PC Emulator and a 120 min audio training tape. Just add £40 + VAT (£47.00 inc VAT).

Courier Delivery Please add £9.00.

The A5000 Learning Curve

The A5000 is now available from BEEBUG, either from our showroom or mail-order.

BEEBUG are one of Acorns largest dealers and have been supporting the Archimedes range since its launch.

You can have total confidence in BEEBUG. Our technical team are always on-hand to provide any assistance and help that you may need with the A5000.

BEEBUG & RISC Developments also produce the magazine RISC User, dedicated to the Archimedes range.

BEEBUG - The Archimedes Specialists

A5000 Features

☐ RISC OS Version 3
☐ ARM 3 For Unbelievable Speed
☐ 1.6 Mb Format Floppy Drive
☐ 40 Mb IDE Hard Drive
☐ Acorn Multi-Scan Monitor

The New Learning Curve Pack

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☐ Genesis 2 Database
☐ 1st Word Plus Wordprocessor
☐ Acorn DTP
☐ Lemmings and Pacmania Games
☐ Audio Training Tape
☐ Optional 300 dpi Ink Jet Printer

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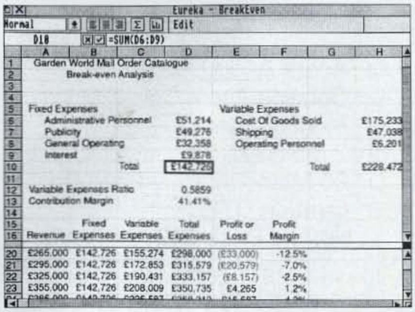
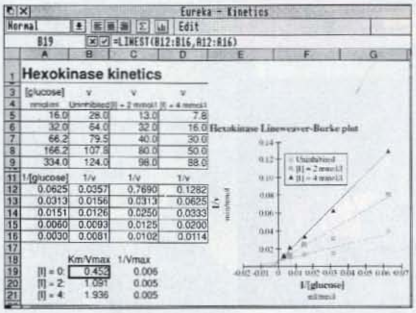


Eureka - BreakEven

Normal | Edit

D18 =SUM(D6:D9)

	A	B	C	D	E	F	G	H
1	Garden World Mail Order Catalogue							
2		Break-even Analysis						
3								
4								
5	Fixed Expenses				Variable Expenses			
6	Administrative Personnel			£51,214	Cost Of Goods Sold			£175,233
7	Publicity			£49,276	Shipping			£47,038
8	General Operating			£32,358	Operating Personnel			£6,201
9	Interest			£9,878				
10			Total	£142,726			Total	£228,472
11								
12	Variable Expenses Ratio			0.5859				
13	Contribution Margin			41.41%				
14								
15		Fixed	Variable	Total	Profit or	Profit		
16	Revenue	Expenses	Expenses	Expenses	Loss	Margin		
20	£265,000	£142,726	£155,274	£298,000	(£33,000)	-12.5%		
21	£295,000	£142,726	£172,853	£315,579	(£20,579)	-7.0%		
22	£325,000	£142,726	£190,431	£333,157	(£8,157)	-2.5%		
23	£355,000	£142,726	£208,009	£350,735	£4,265	1.2%		



Eureka - Kinetics

Normal | Edit

B19 =LINEST(B12:B16,A12:A16)

	A	B	C	D
1	Hexokinase kinetics			
3	[glucose]	v	v	v
4	mmol/l	Uninhibited	[I] = 2 mmol/l	[I] = 4 mmol/l
5	16.0	28.0	13.0	7.8
6	32.0	64.0	32.0	16.0
7	66.2	79.5	40.0	30.0
8	166.2	107.8	80.0	50.0
9	334.0	124.0	98.0	88.0
11	1/[glucose]	1/v	1/v	1/v
12	0.0625	0.0357	0.7690	0.1282
13	0.0313	0.0156	0.0313	0.0625
14	0.0151	0.0126	0.0250	0.0333
15	0.0060	0.0093	0.0125	0.0200
16	0.0030	0.0081	0.0102	0.0114
17				
18		Km/Vmax	1/Vmax	
19	[I] = 0:	0.452	0.006	
20	[I] = 2:	1.091	0.005	
21	[I] = 4:	1.936	0.005	

The Greeks had a word for it...

Spreading the word

EUREKA! – legend has it – was the exclamation shouted by the Greek scientist Archimedes from the bath. So it was only a matter of time before a program was produced with this name.

Longman Logotron (0223 425558) are the culprits with a new Risc OS spreadsheet. At first glance it looks similar to Excel on the PC and Macintosh, and it certainly appears to include all its good points.

Fully integrated charts and graphs are featured. You can choose from a library of several types which can then be embedded into a spreadsheet or be kept separate in another window.

You can define an area of a worksheet as a database, while window splitters permit viewing different areas of a worksheet side by side. Due for release this month, Eureka costs £119.

In the Midi

VERTICAL Twist (0373 824200) – have announced some interesting new products. Under development is a synthesiser podule supporting up to 18 simultaneous melody sounds, five rhythms and up to six four-operator sounds in stereo. There are also pre-programmed voices in rom.

Desktop software will allow you to synthesise your own weird and wonderful sounds as well as those of traditional instruments. It is compatible with the Yamaha DX range with Midi and Archimedes interfaces and should be available in April for around £299.

Sequ-P is a 31-track Midi sequencing package divided into 30 main Midi tracks and one percussion track which doubles as a timing track. The percussion section can be defined as a series of bars of drum patterns repeated and changed as necessary.

Any segment of a track can be edited by removing, copying or deleting it. Deletion makes the track shorter, while removal keeps the track the same length.

Note information can be melodically or harmonically transposed, lengthened or shortened. Program changes can be edited too, with quantisation improving timing and accuracy, plus many other features including special effects.

Two versions are planned for release around May: A cut-down version for education at around £80 with a full-blown professional package at about £160.

Let it shine

MORLEY Electronics (091-257 6355) have developed Sparkle to allow the powerful manipulation of control boxes. The package, which costs £61, was initially developed to teach control required by the National Curriculum in one medium – the Archimedes.

Sparkle is a simple language with all functions emulated via the mouse under the desktop using three control windows – input, output and motors.

The power of the emulation is such that a whole program can de developed and run without having any control hardware attached.

Drawfiles can be tied to the output for a graphic teaching approach. Using traffic light control as an example, when one of the outputs is turned on, a red light appears on screen. When turned off the light is replaced with a black one.

These graphics can be a great deal more stimulating than the traditional LED display.

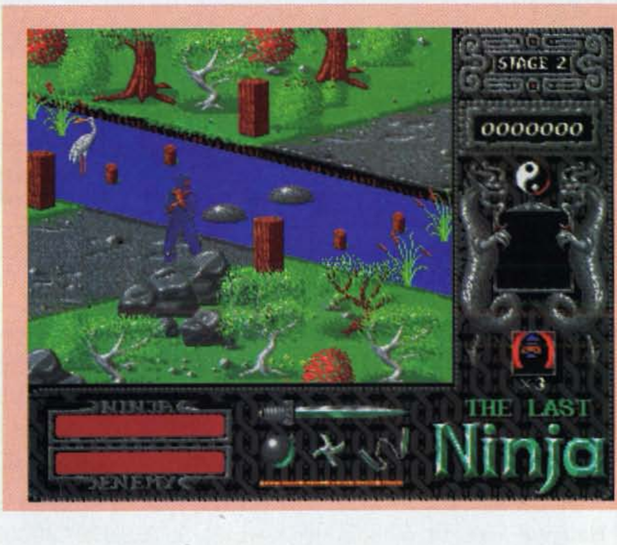
Sparkle also provides counting and timing facilities as well as data logging and conditional starting and stopping.

Painting by numbers

1ST Paint is a new painting package from Keyboard Technology (0509 610706). Designed with children in mind it features a click and go icon which displays tools, colours and canvas.

The palettes and tools available can be configured by the parent or teacher and these choices can be passworded.

The true window environment makes it very intuitive for children to use. There are a total of 16 configurable colours as well as patterns and picture stamps, plus eight outline pictures to customise and paint and more can be added at will. It runs on a 1Mb Archimedes and costs £29.50.



The Way of the Ninja

LOVERS of martial arts will be pleased to see the Archimedes version of **The Last Ninja** from Superior Software (0652 58585).

Written by Andrew Catling who also programmed *Drop Ship* and *Legend of the Lost Temple*, it is different to the BBC Micro version with new maps and puzzles, extra screens as well as different fighting techniques. As you can see, the graphics promise to make the most of what the Archimedes has to offer.

COMPOSE YOURSELF!

Last week, Miss Brown was in a tangle. Her music class wasn't prepared in time. One group wanted to play the drums, but the music budget barely stretches to a tambourine. Another wanted to write its own music, but it all got rather messy. In the end, she got them all to sing a round song.

This week, Miss Brown is using *Notate*. Now composing music is easy — notes, rests etc. can be placed directly on the screen. Then the music can be played back immediately, and changes made to rhythm, tempo or pitch. When it's done, they're going to print out their piece — a nice neat copy for every musician in the class.

Next week Miss Brown is going to introduce 'Music of the World'. African rhythms, marches, rap, pentatonic scales — *Notate* can do the lot. It's even simple to move individual parts between tunes — ever heard the National anthem with a reggae percussion section?

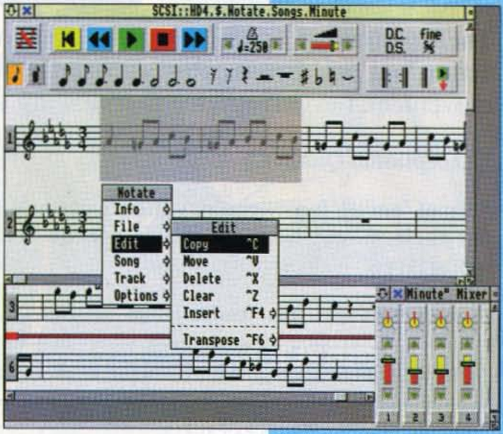
Notate uses the standard Archimedes 'voices'. The computer can sound like anything from a cow bell to a trombone, from a melodic tom-tom to a hand clap. And up to eight of these 'instruments' can be played at once.

Miss Brown has a sound sampler attached to her Archimedes too, so she can record more of her own instruments. Including the human voice. So now three students are singing a barber shop quartet — the computer is humming the fourth part.

Whether you want to play percussion with seven year olds or think theory with seventeen year olds,
compose yourself — with *Notate*.

Notate

DESIGNED IN THE CLASSROOM
FOR MUSICAL EDUCATION



Notate offers the following features:

- Comprehensive support materials in the manual and on disk
- Up to eight individual staves
- A wide range of synthesised and sampled sounds
- Ability to use accidentals and repeats
- Full range of time and key signatures with control over tempo and volume
- Automatic checking of note length relative to the bar space remaining
- Easy-to-use tape recorder style control panel
- Chord facility
- Mixer controls to adjust stereo balance and volume of all tracks
- Configurable for different levels of musical skill
- Editing facilities which, like word processing, include cut, copy, move and delete within bars, staves or between compositions
- Up to four compositions editable simultaneously
- Ability to transpose single parts or whole compositions
- Export and import of MIDI format 1 files
- Ability to play via MIDI where a suitable interface is fitted.

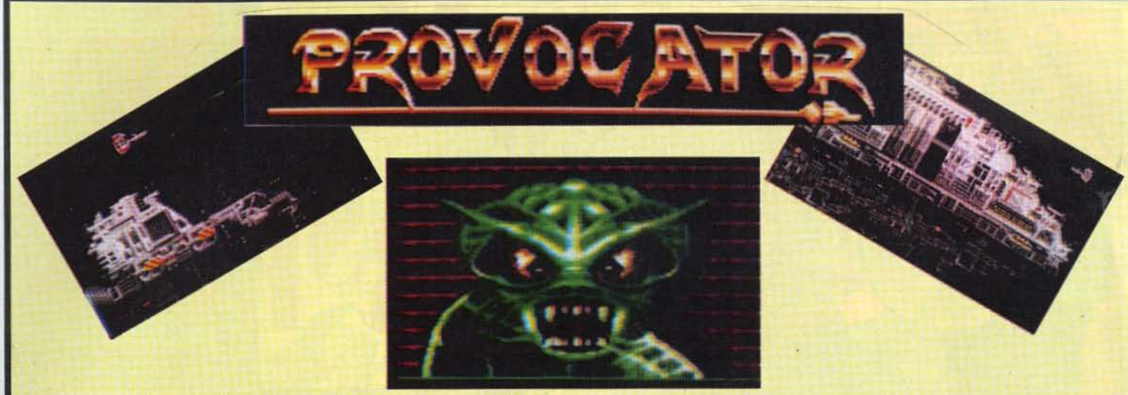
Notate is available now, priced at £59.

A site licence for Notate costs £190 for a primary school and £330 for a secondary school

LONGMAN LOGOTRON

124 Cambridge Science Park
Milton Road
Cambridge CB4 4ZS

Tel. (0223) 425558
Fax (0223) 425349



The first **true** arcade game for the Archimedes. Unrivalled by competitors for sheer speed, action and fun! **Provocator's** unique control method gives the player complete freedom of movement, never restricted to following a set route.

"Exceptional Quality" – *Games X*

"Shoot 'em up fans...can dry their tears and get out their money because classic arcade action has arrived" – *Archimedes World*

"Really smooth...fast and furious" – *Micro User*

PRICE £19.95 inc VAT

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Computer Tutorial Services Ltd

Computer Tutorial Services Ltd, 4 Mill Hill Road, Cowes, Isle of Wight, PO31 7EA. Tel: (0983) 294333. Fax: (0983) 298439

Archimedes Software

Disc 7 - Chess - The best Archie Chess program
A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window. You can work with other programs whilst you play. Risc User July 1991 said: *"Chess is an absolute bargain. .playing at a comparable level it always beat Micro Power's offering. ...this has to be the one to go for".*
Acorn User October 1991 said: "*It plays an excellent game*".

Disc 8 - CrossStar 2.XX Crossword puzzle solver
RISC OS compliant desktop Crossword puzzle solver. 200,000 word dictionary. Solves interlocking clues. Editable/ user definable dictionaries. Saves grids as Draw files. Browse through dictionary. Add new words to dictionary.

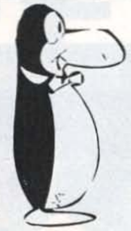
Disc 32 - Charm language and development environment
Charm, is a high level language like Pascal or C. This implementation, includes a compiler, linker and assembler, with an editor, and a desktop environment to use them from.

Disc 33 - Panorama. Your window on the World!
180,000 coordinates outlining the lakes, rivers, continents, borders etc. of the World and a program that can produce Draw files from them. You can make maps of any part of the world and then use them in DTP programs. Includes positions of nearly 1000 cities. Mercator and perspective projections.

Disc 34 - ArcFS. Compressed filing system.
ArcFS
Allows files to be stored in archives in much less space, but because it is a true filing system, programs will work exactly as normal. Read/write, so you can write files back to archives. Files can be encoded for security. Reads Spark archives.

Discs cost £5.99 each inclusive Buy four claim one free!

Banish Those Jaggy Blues !



Disc 35 Trace

- Trace converts Sprites into Draw files.
- Sprite format clip art is cheap and plentiful. Draw clip art is expensive and usually has to be painstakingly drawn by hand.
- Sprites take up lots of valuable disc space. Draw files are smaller.
- Scaled Sprites have jagged edges.
- Unlike some trace programs, Trace will work with full colour sprites.
- You can now use the powerful tools in Draw for manipulating Sprites.

Comes with D2Font program for making outline fonts from Draw files. So you can scan your own fonts. Cost £5.99 inclusive.

Clip Art Packs

Each pack consists of three discs filled with good quality black and white Sprites for use in DTP. The files are compressed using Spark so many 100's of pictures and Mb. come in each pack.
Pack #1: Decorative alphabets. Anatomy. Animals. Astrology. Books. Stylish pieces of text. Pointers-hands and arrows. Outlines for cards.
Pack #2: Cartoon and comic characters. Flowers. Foods. Miscellanea.
Pack #3: Music. TV and folklore monsters. Mythical and religious beasts and objects. People and celebrities. Space, space travel.
Pack #4: Peoples heads. Christmas. Easter. Halloween. Transport, boats, cars, trains planes. Old cars. Company logos and icons.
Pack #5: Woodcuts. Whimsy. Sports - football, baseball, tennis etc.

Each pack is £5.99 inclusive.

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.

Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, art), please send for free list.

Join us on a fascinating voyage of discovery!

Now YOU can recapture the games that made history

The thrilling evolution of computer games – as seen through the pages of *The Micro User*

The archives of *The Micro User* provide a fascinating insight into the incredible, unstoppable development of home computing in Britain over the last decade.

As we enter our 10th year, we have found it a fascinating exercise to turn the yellowing pages of the magazine's early issues and relive the pioneering spirit that imbued the enthusiasts of those days.

They contain, in microcosm, the history of microcomputing throughout the Eighties. Of how tapes evolved into discs, the rapid expansion in memory capacity, the proliferation of interfaces and add-ons, the explosion of sound and colour.

And those trail-blazing games . . .

Month after month those tyro programmers who found fame writing for *The Micro User* succeeded in pushing back the frontiers. Month after month they came up with ingenious, revolutionary ways of squeezing more and more power out of their BBC Micro. Many who cut their teeth on the type-in listings in our pages went on to become leading programmers in the cut-throat commercial world that was beginning to develop.

We have dusted off some of those *Micro User* classic games to see how well they have stood the passing of time. And the answer is: *Very well indeed!* They make as compulsive playing in the Nineties as when they were born.

It was an intriguing peep into the past. So much so that we would like our present-day readers to share in the excitement we all felt at the magic that was created with just 32k of memory and eight colours.

Our birthday treat to you is a unique collection of 10 classic games from Year One of *The Micro User*. A nostalgic compilation that lets you revisit old favourites of yesterday and add forgotten examples of pioneering programming to your collection.

Although they were only originally programmed for the BBC Micro, we have also prepared versions that work on the B+, Master and Compact, as well as on the A3000 and Archimedes. All of them capture the essence of the early Eighties – complete with flicker!

10 pioneering programs – for just £9.95!

This is what your disc will contain

Air Strike Test your skill over three levels of surface-skimming flying, taking out air bases and destroying aliens. Fast, furious and not a little tricky. *May 1983*

Barrel Battle A fun game to keep you amused for hours. Collect the teapots, climb the ladders and avoid the barrels rolling down the levels. *January 1984*

Death Watch A game for the paranoid. Attacked from land, sea and air you must defend your position by efficient use of the cannon. *March 1983*

Fruitie The fruit patch is filled with nasties which follow you through levels and up ladders. Your only defence is how fast you can dig. *August 1983*,

Goblins Armed with five magic coins you must find your way around a maze of trees, avoiding and destroying the deadly goblins. *November 1983*

King Kong The classic villain has kidnapped two girls and once again sits astride the Empire State Building. Can you avoid the falling boulders and rescue the girls? *April 1983*

Robin Hood Meet the Sheriff in this version of the classic love story. Firing arrows at the baddies creates a ladder to rescue Marion. *September 1983*

Space Pod A new threat from outer space. These creatures will eat your base unless killed with the lasers. A simple and finger-aching version of Space Invaders. *July 1983*

Space Pilot A sophisticated and polished space game. Sharp shooting, docking and landing on planets all need a keen eye and precise positioning. *June 1983*

Ten Pin Go down the alley but keep out of the gulley in this computer version of 10-pin bowling. But it's not quite as simple as seems. *July 1983*

ORDER FORM

The History of the Micro User Games Volume 1 costs £9.95 on all formats.

Please send me (tick your choice):

☐ BBC B/Master disc 40/80 track flippy
☐ Master Compact disc
☐ BBC B tape
☐ BBC A3000/Archimedes disc

I wish to pay by
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☐ Visa/Access

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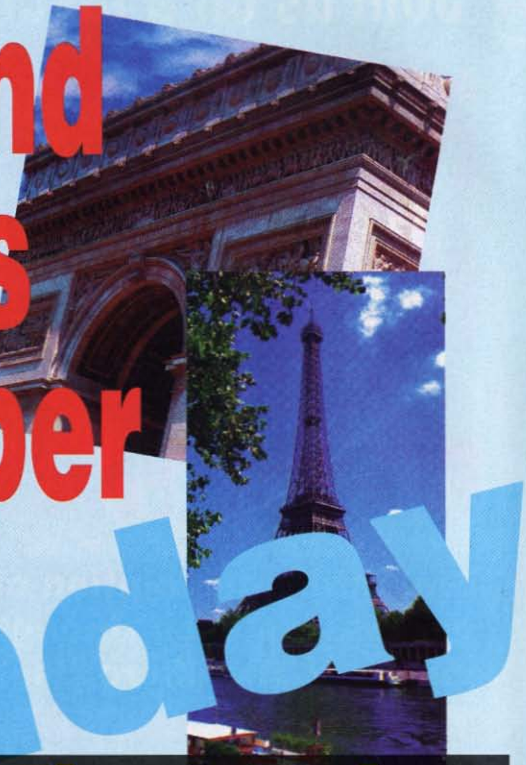
Win a weekend in Paris – plus 160 other super prizes in our Birthday competition



This is a year to celebrate. It's 500 years since Columbus discovered the Americas and 40 years since the coronation of Elizabeth II. It sees the birth of the Euro Disney Resort® and the start of The Micro User's 10th Year.

Joining us in the celebrations are those mainstays of the Acorn market, Hybrid Technology and Superior Software. You can share in the celebrations with the opportunity to win superb prizes in a great competition – combination of a once-in-a-lifetime holiday AND a choice of top quality software.

First Prize

– worth over £700

THE Euro Disney Resort will open its gates in April and you and your family – two adults and two children under nine years of age – could win a weekend break to experience its fun, frolics and festivities, plus all the wonder of a weekend in Paris.

To provide the best holiday for you Hybrid, Superior and *The Micro User* are offering you a choice of where to stay:

- **Camp Davy Crockett, in the Euro Disney Resort itself, gives you a self-catering settler-style holiday in a log cabin with every facility – kitchenette, bathroom, colour TV and telephone. It's built in a picturesque wooded retreat 10 minutes away from the Theme Park. You can hire a bike, follow a nature trail or visit the children's farm, the small western fort, health club or indoor swimming pool, as well as experience all the wonder of Disney.**
- **Hotel Ibis Bagnolet, Paris gives a comfortable bed and breakfast base for sightseeing in Paris, enjoying the legendary night life or visiting the Euro Disney Resort.**

The Metro is only a short walk away and from there you can use your Euro Disney Resortland Passport to give you two days of unlimited opportunities to taste the delights of Euro Disney Resort from Main Street, Fantasyland, Discoveryland, Frontierland and Adventureland to the host of attractions in the Entertainment Centre.

There is the RER Metroline direct to Euro Disney Resort and your Passport will allow you two days free travel in Paris itself.

All arrangements are through AirTours, and there is a range of airports you can fly from. This winter weekend could be answer to your dreams.

Second Prize - 20 lucky winners

Archimedes owners

A copy of Elite or Air Supremacy is on offer for 10 lucky winners.

● **Elite** – a classic name and a classic game in all its formats. The Archimedes version has been called the ultimate in space adventures. It involves not only space strategy, you must use all your little grey cells for trading to the best advantage and all your combat skill to stay alive.

It's not just a conversion of the BBC Micro original because hidden away – where you least expect them – are other intelligent pilots, and nests of police Vipers who may come to your rescue. If you have had enough of the straight and narrow there are always piracy, bounty hunting or scavenging.

There are more missions to keep you occupied. The new craft now flying around will keep sending you back to the ship ID cards. The trainee accountants out there can have some help with their trading accounts with the trading prices record sheets.

● **Air Supremacy** – a 3D adventure in the sky. The year is 2150 and the war for earth's meagre resources is in full swing. As a member of a special force your task is to restore a balance – even if this means destroying all who oppose you.

You must go through tough training missions before you're let loose on the real battle. The combat simulator hones your skills as a pilot as you are put through three 20th century wars gaining promotions with each wave of land, sea and air vehicles you annihilate. You can opt for a tank or aircraft and even swap between them at either of the two airports which represent your home base. A fascinating game to play with some superb ship designs to encourage you to work your way through the levels. To give you the edge you have radar and smart bombs but there is no substitute for good sharp shooting.

BBC B, Master and Electron owners

You could win a bright selection of games from Superior Software. Available for all the 8-bit micros are Elite, SimCity and Exile. There are five prizes available for the BBC Micro and five for the Electron – if you are one of the lucky winners you can choose two of these three games for your very own.

● **Elite** is now nine years old, and over the years has been converted to many different machines. Yet Dave Braben's original game was so ahead of its time that it is still gaining fans as fast as ever.

● **SimCity** is a world away from cosmic battles but you'll need all your wits about you as you struggle to lead your city through planning and development to economic success and the good life.

● **Exile** belongs to the family of games which has made Superior's excellent reputation over the years. In a massive continuously scrolling arcade adventure, you must release the planet of Phoebus from the evil and rightly-exiled genetic engineer Triax.

Third Prize

The 40 third prize winners will each receive one of the following:

10 x Elite sweatshirts	10 x Elite T-shirts
10 x Superior T-shirts	10 x Repton mugs

Runners up prizes

There are 100 Elite posters just for you.

What you have to do

To win one of these truly excellent prizes, all you have to do is read the following multiple choice questions very carefully. Then select the answer you consider the right one, enter it on to the coupon, fill in the tie breaker and ensure that it reaches ***The Micro User*** before the deadline of March 31.

The questions

1. Including this birthday issue and number 1, how many issues of *The Micro User* have there been?
a. 108 **b.** 109 **c.** 110

2. Including the Archimedes, how many different models of computer has Elite been published for?
a. 5 **b.** 10 **c.** 15

3. What is the model name of the player's ship in Elite?
a. Viper **b.** Cobra **c.** Hammerhead

4. Air Supremacy visits a number of timelines. Which of the following is not included?
a. 1970 Vietnam **b.** 1944 Pacific **c.** 1991 Arabia

● *Please note that the holidays are subject to availability, but one of a similar standard will be provided should the need arise.*

This competition is sponsored by Europress Publications, Hybrid Technology and Superior Software

Entry Form

Name: James Dale

Address: ....

.... Postcode: ....

Daytime telephone: .... Age: 8

The answers

1. .... 3. ....

2. .... 4. ....

The tie-breaker

I must go to Euro Disney Resort because (in not more than 20 words) ....

....

....

Details

If I win the first prize I would prefer (please tick):
a. Camp Davy Crocket ☐ **b.** Hotel Ibis Bagnolet ☐

If I win one of the second prizes I would prefer to receive (please tick):
a. Archimedes Elite ☐ **b.** Air Supremacy ☐

c. These two Superior games....................

BBC 40/80 track ☐ Master Compact ☐ BBC tape ☐ Electron tape ☐

If I win a T-shirt or sweatshirt please send me one of the following size:
Small ☑ Medium ☐ Large ☐ Extra Large ☐

Now send your entry form to: Birthday Competition, The Micro User, Europa House, Adlington Park, Macclesfield SK10 4NP.

BBC MICRO USER
THE MICRO USER
Learn how to cheat at Elite
Acorn unveils
We reveal the hidden potential within the B+
Project
The dawn of a new era?
A3000

Going on TEN

Steve Turnbull takes a look back at how The Micro User has covered the developments in the Acorn world

ACORN have been stalwarts of the British Computer market since before, during and after the great micro boom era of the mid-1980s. Their developments have, in most cases, been ahead of their time. So let's take a look at these years of advance and where they were reflected in the pages of *The Micro User*. And we'll throw in a few predictions for good measure.

In the beginning

MARCH 1983: The BBC Micro and its proud owner were beginners. No one knew the potential that was to be realised with this machine.

The first IBM PCs existed but though they had lots of memory they couldn't match the speed and colours available to the BBC Micro. Commodore and Atari hadn't even been heard of.

AUGUST 1983: Electron launched for the mass market – as a cut down version of the BBC Micro it lacked too much hardware and was too slow. It failed to make an impact and was discontinued.

MAY 1984: The height of the boom period and *The Micro User* had 228 pages. At this time Acorn tried to expand into the USA only to be confronted by their American rival Apple with the Apple II. The US push failed miserably.

SEPTEMBER 1985: The BBC B+ was released with extended memory, up to 64k, and additional space for larger roms, but the extra ram wasn't available to most programs. Although an improvement, the machine was perceived as a stop-gap by informed commentators.

FEBRUARY 1986: The B+ was a stop-gap after all, Acorn revealed the Master with 128k of memory and lots of software available in rom plus two slots for plug-in rom cartridges. There was a new version of Basic too. But the additional ram wasn't automatically available and software companies were forced to continue to write for the lowest common denominator, the old Model B.

SEPTEMBER 1986: Cut-down Master appeared in the form of the Master Compact. A curious machine designed for the education market, it had a built-in 3.5in drive as standard. More successful than the Electron but not a winner.

JANUARY 1987: In conjuction with Phillips, Acorn released the Domesday project on LaserVision disc – the forerunner of CD roms and hypermedia.

Archimedes launch

AUGUST 1987: The Archimedes was released, the first sub-£1,000 32-bit micro. In fact it was just about the first 32-bit micro ever, beating the PC and Macintosh markets yet again. The internal processor was the ARM2 which was itself designed by Acorn. Another first.

FEBRUARY 1988: Acorn's long-time rival, Sir Clive Sinclair, brought out the Z88 laptop computer, which incorporated BBC Basic and a version of the BBC Micro's View Professional spreadsheet/word processor called Pipedream.

Arthur out

APRIL 1988: The Archimedes' monotasking operating system called Arthur, was replaced by Risc OS 2, which provided a fully integrated wimp-based multi-tasking environment – this was another first as multitasking on other machines was very poor at this stage.

SEPTEMBER 1989: The BBC A3000 was launched – a single unit ARM-based machine with 1Mb of memory. Essentially identical to the A300 and A400 as far as software goes, the only cut was in hardware expandability.

NOVEMBER 1991: The A5000 appeared. Based on the faster ARM3 chip, it used an enhanced but compatible operating system Risc OS 3. It out-performed, in both software and hardware, PCs and Macintoshes of twice the price.

JANUARY 1992: Acorn unveiled *Acorn Replay* a video playback system that was far superior to its equivalents on the PC and Macintosh.

Tomorrow's world

1992: ARM-based portable micro running Risc OS 3 released to cater for the Education market.

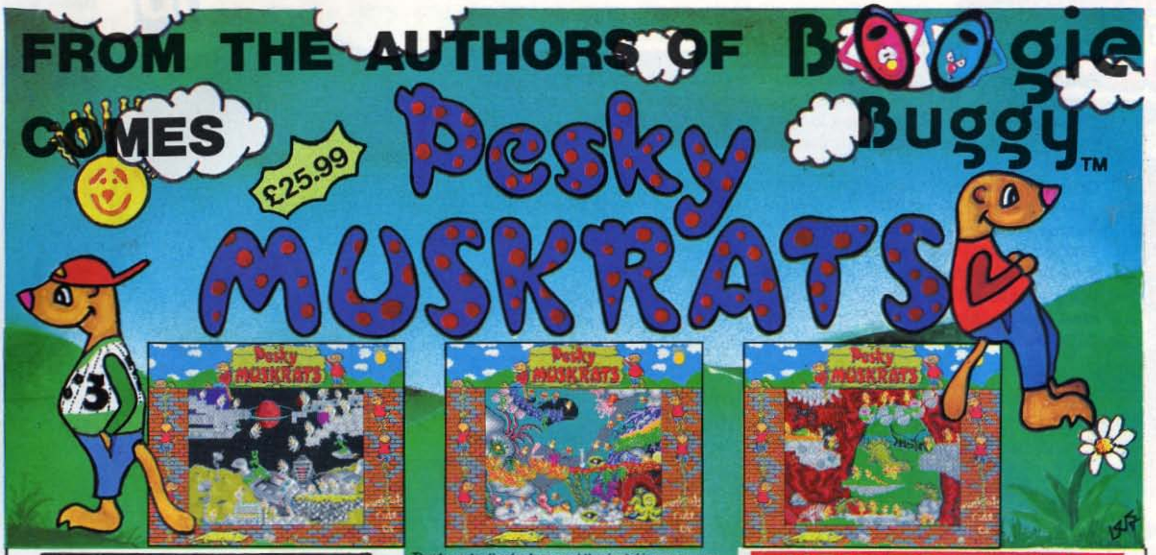
1992: Third-party release of 16 million colour board fully compatible with Desktop environment.

1993: ARM6 micro appeared with dynamic networking and able to access over 2,000Mb of ram. The remaining members of the ARM chip set enhanced to give full colour capability and access to the complete memory map without the need to daisy-chain MEMC chips.

1994: Palm-top 32-bit machine released with mini-trackball and full colour display.

1995: Multi-processor, dynamically configurable, tower machine unveiled with internal capacity for 16 processors, maximum throughput over 100 MIPs.

1996: IBM and Apple released the first machines from their cooperative venture signed in 1991 utilising Risc technology and a multi-tasking operating system – nearly 10 years after Acorn.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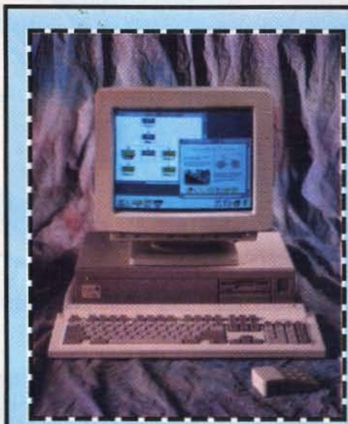

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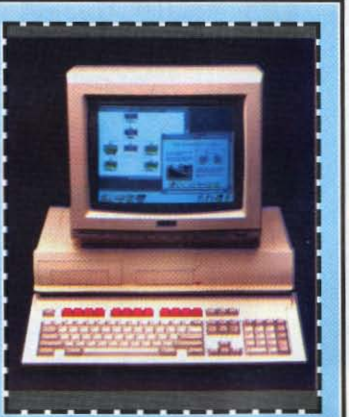

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EDUCATION Update

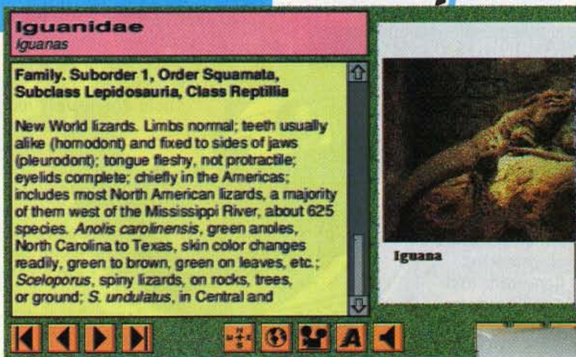
It's show time

BETT'92 may not be the only education show of the year but it is the place to find out where the educational and computer markets are going. It's a good opportunity to launch new products and to see what will be appearing over the next few months.

It's a big show, taking up both Barbican Exhibition halls, so it's difficult to see everything – some very nice Acorn products are hidden away behind PC-compatible corners – but impossible to miss this year was the prominence of CD Roms.

This mass storage device provides an extremely economical way to keep all sorts of data. Prices have been falling over the years and for real value for money you should talk to Cumana (0483 503121) who have worked with Acorn in producing the CDFS.

With a deservedly good reputation for quality disc drives and CD Roms, they announced two initiatives at the show which have major implications for schools. For £299 any school can have a CD Rom, SCSI/CDFS interface and cable for an Archimedes. This price is quite incredible and it's a pity that the offer is restricted to schools.

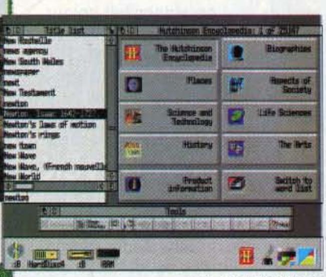


Iguanidae
Iguanas

Family. Suborder 1, Order Squamata, Subclass Lepidosauria, Class Reptillia

New World lizards. Limbs normal; teeth usually alike (homodont) and fixed to sides of jaws (pleurodont); tongue fleshy, not protractile; eyelids complete; chiefly in the Americas; includes most North American lizards, a majority of them west of the Mississippi River, about 625 species. *Anolis carolinensis*, green anoles, North Carolina to Texas, skin color changes readily, green to brown, green on leaves, etc.; *Sceloporus*, spiny lizards, on rocks, trees, or ground; *S. undulatus*, in Central and

Dictionary of the Living World



The world fact book

Buy this system and you'll get £80 off EasyShare – also making its debut at BETT'92. It allows small groups of computers to share the costly SCSI peripherals such as hard discs, CD Roms and optical drives.

Cumana's CD rom drive

Managing Director, John Simnett commented: "Thanks to the high volume of sales that Cumana have achieved, particularly within education, we are now able to offer the CD Rom drive at a price that is within the range of most users".

But what is the use of such nice pieces of hardware if you have nothing to use with them? There are hundreds of CDs around for Apple Macintosh and IBM PC machines, but the developers have incorporated a reader for those particular machines. So when buying make sure that there is an additional Archimedes disc to allow you to access all the data.

Fortunately, there are a number of CD Rom products being written with the Archimedes in mind. The excellent Revelation 2 from Longman Logotron (0223 425558) is now available on CD Rom with 65Mb of colour image resources for £139.

On a more European note is Oak Solutions' (0274 620423) CD Rom version of Ma Ville, while Iota Software (0223 421542) are developing First Class. This is fully interactive tutorial for the Acorn family and shows what will probably be the major use of multi-media – interactive learning. It will also automatically detect the operating system you're using – Risc OS 2 or 3 – and adapt its messages accordingly. Fred Harris – of Learning Curve video fame – will guide people around the machine.

Moving over from the PC side of the tracks come Allied Interactive (091-482 2214) with Quanta Press CIA World Factbook – a self-explanatory product.

They are planning more conversions and though you could use the PC emulator to access PC CD Roms, the native ones are faster and present more features.

As you delve into the world of CD you'll become familiar with the buzz

➤

Software avalanche

THE green message was more definitely in evidence this year too with new products such as Sherston's Crystal Rainforest (0666 840433). Written by Simon Hosler for the Archimedes, this graphic adventure is set on a distant planet which shares certain similarities to earth. The mission is to save the rainforest and the planet.

Fisher-Marriot (0203 616325) have produced Starspell Plus as part of an integrated approach to language and spelling. Recommended by the British Dyslexia Association, Starspell Plus uses large letters as well as the *Look-Cover-Write-Check* method.

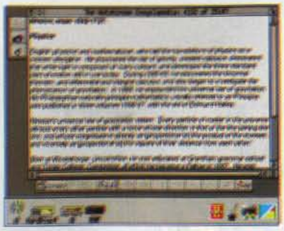
Priced at £19 it recognises the importance of letter patterns and families of words, with over 134 letter patterns and 1,600 familiar words on BBC Micro or Archimedes.

Fisher-Marriot are also in the process of converting some products to the Archimedes.

ThinkSheet was well received in the PC market by education and business. It is a powerful, but simple and intuitive way to organise your ideas and text.

You make notes on cards which can be sorted and stacked on many levels. Thoughts are turned into text which can then be presented in a variety of ways. Ideal for planning, making and assessing notes.

Look out too for Numberscope and Timeshare, available for BBC Micro and Archimedes at £19 each. Numberscope deals with early number work while Timeshare uses five programs to teach the concepts of multiplication and division.



Hutchinson's Encyclopaedia

➤

word – interactive. This term is open to a host of definitions, but the one I like is embodied by Interactive Learning Productions collaboration with the RSPB and the British Library.

British Birds uses Acorn Replay (see the main feature in Newsbeat) to include motion video, full colour images of all British Birds with their calls, songs and relevant text. The £125 asking price also includes mapping and quiz facilities as well as a hypertext system and teacher's manual and curriculum materials. This promises to provide real multi-media education.

In the meantime conversions for the Apple Macintosh world are promised soon with Media Design Interactive working on the Dictionary of the Living World.

A multi-media database it includes 3,000 text entries illustrated with over 1,000 pictures and 100 animal sounds plus 100 full-motion video clips and animations. You can get hold of a copy through Optech (0252 714340).

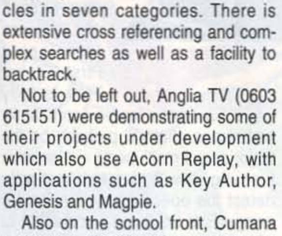
PEP Associates (0354 694170) are also involved in porting Hutchinson's Encyclopaedia with over 25,000 articles in seven categories. There is extensive cross referencing and complex searches as well as a facility to backtrack.

Not to be left out, Anglia TV (0603 615151) were demonstrating some of their projects under development which also use Acorn Replay, with applications such as Key Author, Genesis and Magpie.

Also on the school front, Cumana gave the details of the Cumana Cashback Club. Called a foolproof fund-raising scheme, it's a nifty piece of marketing from which everyone benefits. Participating schools will receive a catalogue printed with a number unique to each school.

These are sent home with the children and as far as the school is concerned, their role is finished. The catalogues will include disc drives, discs, printers and other pieces of equipment – not just from Cumana – for a wide range of computers.

Orders are sent directly to Cumana who credit the school with five per cent. At the end of each term a cheque is sent from Cumana to the school to do with as they wish. You can contact the Cumana Cashback Club Hotline on 0483 440603.



True multi media

Keeping control

WHATEVER your views on Logo and control in general, the National Curriculum have made them a way of life. Thankfully, software houses are trying to make things simpler for all concerned.

VALIANT
GO
LCSI and LOGOWRITER

Commotion (081-804 1378) took the opportunity to expose CoCo – Commotion Control for the Archimedes. A multi-tasking program priced at £49.95 it is heralded as easy to control but sophisticated.

Commands are asked in standard English which in itself should develop good language concepts in young children. The keyboard has been bypassed as all control can be made via the mouse.

Procedures can be built and called from within others and it responds to a real-time clock, as well as digital and analogue inputs. But CoCo can speak. His voice will answer and interact with models, which is exciting and stimulating for all ages.

Essex LEA, and John Sams in particular, were demonstrating products to help even the most non-technical teacher. Walks is a simple picture-based Valiant turtle controller for infant and lower juniors working on Technology AT5 3b and 4b. Priced at £10 – special prices available for Essex schools – it doesn't need Logo, but introduces control easily which can lead to Logo at a later date.

Sequence Controller and Pelican are two other programs also for the BBC A3000. Sequence priced at £10 encourages children to control motors, lamps, sound effects and so on using the mouse, while Pelican at £75 takes it one step further with a plastic model pelican crossing with lamps, push button and a traffic sensor.

All the programs are written with a good use of icons, windows and menus to make control natural rather than a chore. Additional information can be obained from IT Curriculum Support Mid Essex CDC, Gordan Hall, Duffield Road, Great Baddow CM2 9SW.

Valiant (081-874 9000) have released a new software pack called LogoWriter. Aiming to widen the uses of Logo away from just concentrating on turtle graphics, it provides programming, graphics and word processing in one pack.

There are actually four packs available – the Basic Pack provides Logo without the support available in the Primary, Intermediate and Secondary editions. You can buy the teaching materials separately – word cards, teachers' notes, manual, programming manual, wall poster and keyboard sticker.

Yet more help is available from Keyboard Technology (0509 610706) with LogoBox for the Archimedes – prices starting at £20. Described as an intuitive start to Logo it is aimed at five year olds with no need for precise language or typing skills.

Level one starts with all Logo commands entered with one keystroke on a MatchBox keyboard. From this beginning, children move on to constructing and saving simple procedures to produce turtle graphics. The LogoBox with overlay cards simplifies matters, while at the same time being helpful for special needs children.

Watt's new?

OLD hands will have used Power Package for the BBC Micro produced by the Electricity Association some seven years ago. It is set at the secondary school level and it has now finished a major revision, reflecting the changes in the electricity supply industry and in the school curriculum.

Due this spring for the Archimedes, the new edition's price does not reflect the volume of high-quality material supplied in the pack. The curriculum areas covered are very varied: Science, economics, geography, mathematics and technology.

The coursework and programs are aimed at the 14-18 age group. The software uses a schematic grid with customers or producers at the nodes. You can add new stations and the balance of supply and demand controlled. The Electricity Association can be contacted at 30 Millbank, London SW1P 4RD.

Hyping new media

MORE and more products are being produced using hypermedia packages such as Genesis, Magpie and Key. Appian Way (091-373 1389) have taken Magpie and used it to create the Archimedes Exploration packs. This series deals with a range of topics to cover Key Stages 2 and 3 in science, history, geography and art.

EXPLORATION
"Exploration"

First to be produced are Woodlands and A Victorian Household each costing £25. They can be used for small group work and can form a major resource across the curriculum. Future packs include: Seashore, Ponds, Towns at Night, Victorian Holiday and Victorians at Work.

Woodlands deals with the ecology of life and has been designed as a stimulus to woodland studies. The Victorian Household looks at the daily lives and activities of a prosperous Victorian family and their servants.

Using the Magpie system means that the Topic Packs are easy to use with clear on-screen instructions, attractive graphics and clear and logical text.

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Each system includes a high quality hard disc drive and a leading SCSI board (the Oak Solutions super fast 16 bit card).

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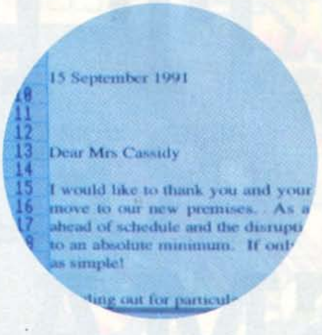

15 September 1991

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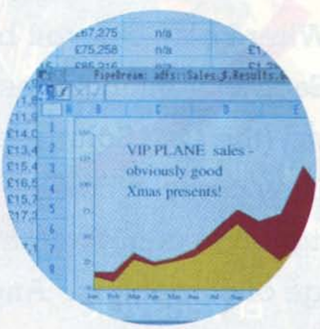

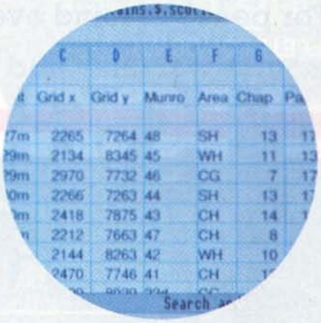

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2212	7663	47	CH	8
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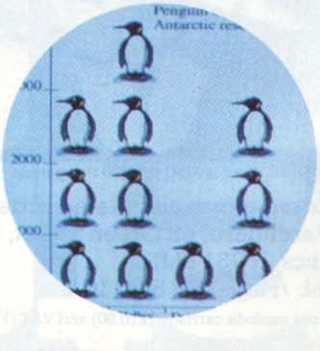
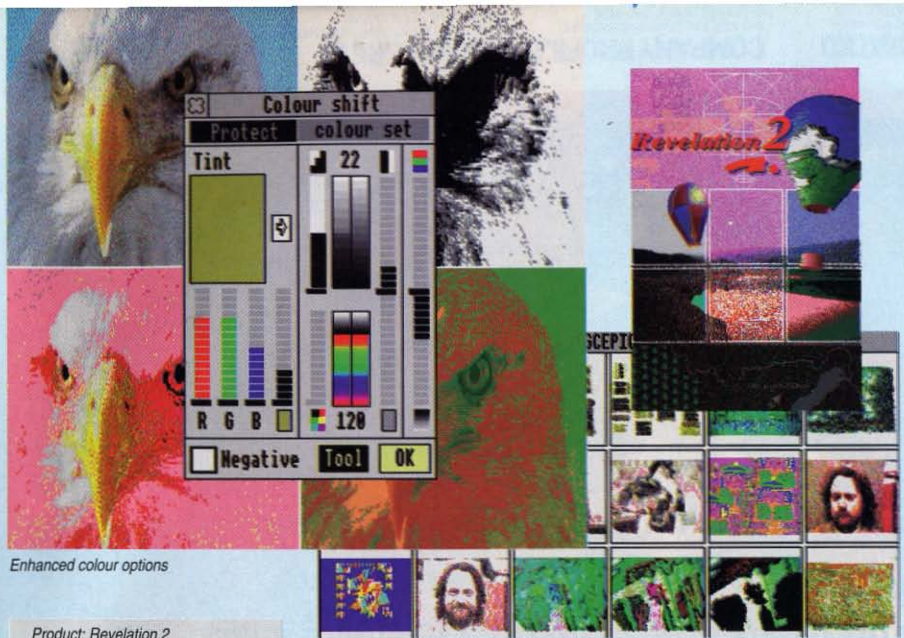
2470	7746	41	CH	





Enhanced colour options

Product: Revelation 2
Price: £119 or £139 for the CD Rom version
Supplier: Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 0223 425558.
Requirements: Risc OS

Bigger and better

Steve Bruntlett looks at the changes to Revelation

THE new version of Revelation is available on disc or CD Rom along with two Curriculum Guides, Special Features and Electronic Photography. These extra documents are especially useful as they show some of the new features of Revelation 2 and are probably the best way to start using the program.

Special Features deals with the new geometric drawing tools, graded fills, new ways of manipulating motifs, designing patterns and advanced work with the colour shift control panel. Electronic Photography deals with the importing and processing of images, tinting and applying colour shifts to specific areas of an image – rather than the whole screen – adjusting colour and using an increased range of special effects now including Sharpen and Dither.

If you opt for the CD Rom version you'll get an extra 65Mb of colour image resources in Modes 15 and 28 providing plenty of images to experiment with. In other words, for only £20 more than the single user disc price you get over 80 discs' worth of colour image resources.

The differences between the original and this version are mainly in extensions and developments of the menu options. Using the same menu structure there are now many more options for the production or manipulation of images.

Some new features are available from the icon bar. By dragging a directory of images on to the program icon, all the images in the directory are displayed in miniature in a directory viewer. You can then load the image you want directly into Revelation 2 by clicking on it.

In addition there are the Big colours tall and Big colours wide options which give two large colour palettes. These are supplementary colour menus which can be displayed to allow easier selection of colours, if you have room on screen.

Changing modes

One of the frustrating things about Revelation is that you can't change mode easily. In addition moving from a high to low resolution mode means that some of the information and possibly colours will be lost. In Revelation 2 you can change modes and though the data loss is still probably there, a message warns you about this. This is much better than having to constantly re-run Revelation.

The Page Size dialogue box has been refined and extended too. There are now options for creating a Full screen as a default size and if you have a printer driver loaded there is also the option to create a landscape or portrait Full sheet – the size determined by the settings of the printer driver. All these options make it easier to produce images of a consistent size.

One of the criticisms of Revelation was that there were no graduated fills. In Revelation 2 they appear with a vengeance. The default is a 16 shade grey-scale and the graduated fill is based on the Colour Set selected or produced using the Colour menu.

Not only can you select your own graduated fill colours, but you can choose start and finish colours with the computer working out the intermediate shades. These can vary in number depending on how many shades of the fixed 256 colour palette can sensibly be used.

There are 14 degrees of dithering too, to produce linear or circular banded graduated fills right through to very smoothly shaded fills. What makes the linear graduated fills special is that they can be applied in any direction by clicking and dragging the fill roller icon.

You can finish the fill outside the area to reduce the number of colours of the filled area or drag it across part of the area to achieve a graduated fill in only part of the area. The rest of the area is filled with the end colours of the Colour Set.

The general fill options have also been extended. Now they include the option to fill up to a boundary line internally or externally, ignoring other colours or colour boundaries. You can also tile a motif across the background or force a motif into any outline shape producing distorted motifs.

Drawing made easy

This works well on most shapes, but doesn't seem to work properly on a trapezoid shape like an opening door because of the way sprites are stored – the rectangular middle section is reduced in width but not in height. Only the top and bottom are distorted into the space differences between the two shapes.

The Draw Pen menu has similarly been improved and extended, with additional options to draw parallelograms, curved lines and polygons. The curved line option is especially useful as the curve can be moved before fixing it in place. Line thickness can be used with any shape as an alternative to using a Mark, while line joins and line ends can be toggled between mitred, round and bevelled.

The regular geometric shapes can be toggled between outline and solid. If you're drawing solid shapes clicking on the Density Display will toggle

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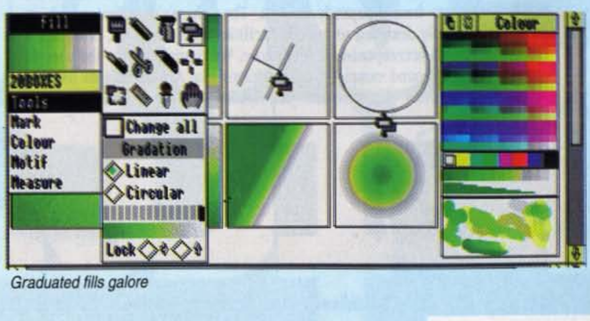
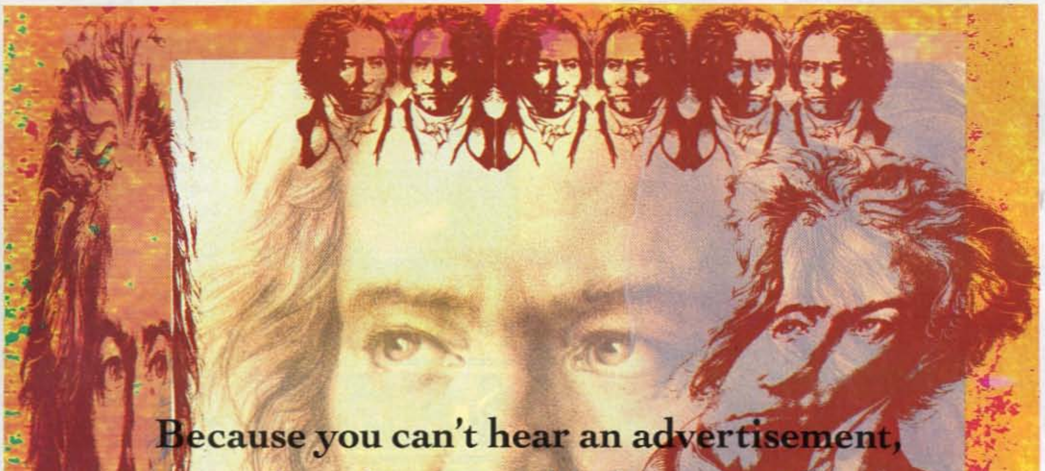


Graduated fills galore


Because you can't hear an advertisement,
we thought we would show you what
Vox Box and Rhapsody 2 can do with your music.

Vox Box and Rhapsody 2 really can enhance your music making. Rhapsody 2 is an improvement on the already successful Rhapsody music notation package. So, now you can do more than ever before. You can drag notes on to the score, transcribe triplets, capture notes in step time and effect MIDI program changes at the beginning or in the middle of a score. Just a few of the new and improved features that you'll discover.

Add to all that the Vox Box symphony of programs, a suite of four programs designed to compliment Rhapsody. There's Perform, which enables the user to play Rhapsody and MIDI files without the need to have Rhapsody present. Then there's Vox Beat which is primarily designed to provide facilities for a drum kit, providing a realistic accompaniment to a score. Vox Sample allows the user to convert sound samples from packages like Armadeus into useable Archimedes voices while Vox Synth will allow you to create Archimedes voices using digital synthesis.

What is more, Vox Synth allows waveforms to be drawn by hand. This means you can transform an existing piece of music into something completely different. Take a Beethoven Symphony, as the illustration suggests, you really can bend it, shape it, any way you want it.

All of this is simply the tip of the iceberg. Hopefully enough to whet your appetite.

So, please write to the address below for your Vox Box and Rhapsody 2 fact pack. It's certain to be music to your ears.

Rhapsody 2 – £61.95 inc. Vat
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Revelation processes images

➤ between solid and a selectable regular or random textured effect in five degrees of density.

The Knife option's Shrink is the same but when using Scissors from the Tools Menu or Trace, Edge, Blur, Sharpen or Dither on the Effects Menu, it can be used in the normal way or the Effect can be applied to the entire Page by clicking once over the Page in question.

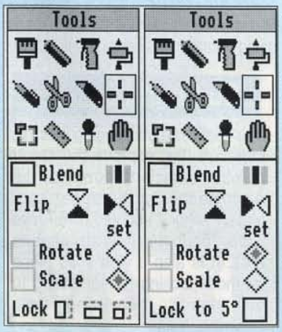
The Paste Registration Tool now has extended options which allow the rotation of Motifs to be locked to 5° movements. When scaling a motif the movement can be locked horizontally, vertically or in a combination.

Fascinating dither

The Effects Tool has extra options to Sharpen and Dither an image at three levels as well as the original Trace, Edge and Blur options. Dither is fascinating as it reduces coloured Motifs to a black and white dot pattern. This seems ideally suited for use in DTP documents where you may not be able to reproduce colour.

The Zoom settings were always useful but you couldn't work on a reduced Page. Using the three new negative settings you can not only see larger-than-screen images but also work on them albeit not totally accurately with some of the tools.

The Colour Shift Dialogue Box was perhaps the most powerful tool in the original program and may have been the reason why Revelation was labelled an image processing package. Used to make adjustments to the colours present on the current image in many different ways, its options have been extended. Colour changes can now be applied through tools in the Tools menu as well as to the whole screen.



Two versions of the toolbox

Two configuration buttons have been added to control the effects and their combined settings and are used by the Colour Shift dialogue box to globally affect all the colours, just the colour set or to protect the colour set from changes. This gives more flexibility in controlling which parts of the image are being treated and makes it a much more powerful tool for colour experimentation.

Revelation 2 is a stronger package with the provision of additional facilities but its real power is in the linking of those facilities to other tools which provides more flexibility and powerful processing where it's needed. A simple example is in the use of the Negative option which until now could only be applied to the whole screen. It can now be used with the Brush, Crayon, Spray, Fill or Draw pen tools which makes it much more versatile.

If that's not enough there's the new Pattern option available from the Motif menu. The Pattern dialogue box in Revelation allowed you to repeat motifs at a fixed distance though the motifs could be flipped and staggered horizontally and vertically.

In Revelation 2 motifs can be spaced positively or negatively. Four mirrors flip alternate motifs making it a much more powerful tool for pattern production. Perhaps Revelation 3 might add some form of compressed filing system and the ability to rotate consecutive motifs or to use combinations of two or more motifs.

Summing up

I shall certainly be using Revelation 2 from now on as my main package as it greatly extends and enhances the work possible in computer-aided art and design. It takes the original package further with the provision of new tools, extensions to the originals and more powerful connections between them.

In no way restricted to education, used in high resolution mode with output to professional colour printing facilities it's the beginning of a professional Archimedes-based system. Revelation 2 is a powerful and flexible package which is intuitive in use and which positively encourages experimentation and professional quality output.

On the trail

Rog Frosts assesses some more teaching materials and activity packs

MISSION: Save Planet Earth and Nature Trails are in a batch of interesting materials by Sherston Software designed to allow teachers and pupils to use professional classroom resources.

Product: Mission: Save Planet Earth, Nature Trails
Price: £13.95 each
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH.
Tel: 0666 840433

Mission is by Geoff and Sue Smith and is based around Sherston's Space Mission Mada program. The story line of the program is environmental, with problems on Earth.

Children play space travellers who can solve the problems by using their mathematical skills. The pack is aimed at the middle school years and in the original packing material it suggests that there could be scope for extending the work to a whole class topic for these youngsters. Mission sets out to do this.

Buyers of the pack will receive a spiral bound, A4-sized book containing 94 photo-copiable work sheets plus a small amount of information and some appropriate answers. Perhaps it should be made clear at an early stage that the authors are based in Australia so no reference is made to the National Curriculum for England and Wales.

It would also be fair to say, and this is no criticism, that Mission relies totally on the software. Without knowledge of or access to Mada, this pack is near useless. The two resources together, though, combine to produce first rate education.

So, back to those worksheets. They are all printed boldly in black and white, with sensible use of borders and graphics. The skills covered are very, very broad. There are straightforward comprehensions at two different levels, sequencing activities and cloze procedures.

Sheets with a geographical flavour – producing maps and so on – require children to research into other resources to learn about the solar system.

There are also sheets offering a stimulus for creativity and others which look at social problems such as immigration. It is all a huge mix and in a review like this I can only scratch the surface.

The other pack in this review is quite different. Nature Trails, by Di Pescod, is not based on any piece of Sherston Software. Indeed, no computer is needed at all to make use of the nearly 90 photocopy masters.

The activities are much more graphical than in the Mission pack. The first sheet is a badger mask which – like all pages – can be photocopied and then cut out. We move rapidly through a buddleia and butterfly scene for colouring and sticking, a deer mask – more complex than the badger – to the making of a food chain mobile.

There are super activities based on footprints, baby animals and bird skulls. To get the most out of some of these, further research will be needed.

There are tasks based on tessellations and the computer minded teacher can certainly make use of their A3000 here. I have had pupils using !Draw to design tessellating animals, starting with the mouse and the fox examples given.

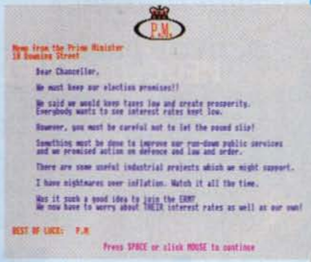
The teacher who is keen on the four rules of number could give youngsters the nature picture puzzles. In these, you have to work out the answer to a sum to select the colour for the picture. These are available at fairly simple and very complex levels.

Summing up

Other activities include mirror symmetry, comprehension exercises and decision making problems. The *Grow an oak tree* sheet may require a certain amount of patience though.

Finally, there are sheets with information on fungi, oak trees and flowers and seeds. Sadly, a few of these sheets have errors, in some cases this is not serious, but at least one idea is rendered unusable Despite this, I still think that this is a super pack which could allow teachers to concentrate on the skills for which they were trained. I look forward to seeing more.

Product: Yes Chancellor
Price: £23
Supplier: Chalksoft, PO Box 49,
Spalding, Lincs PE11 1NZ.
Tel: 0775 769518
Requirements: Risc OS



Memo from the Prime Minister
10 Downing Street

Dear Chancellor,

We must keep our election promises!!

We said we would keep taxes low and create prosperity.
Everybody wants to see interest rates kept low.

However, you must be careful not to let the pound slip!

Something must be done to improve our run-down public services
and we promised action on defence and law and order.

There are some useful industrial projects which we might support.

I have nightmares over inflation. Watch it all the time.

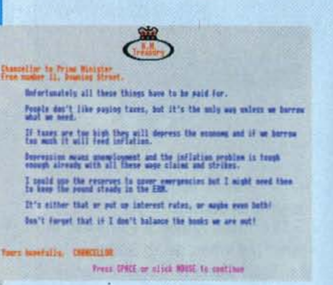
Was it such a good idea to join the ERM?
We now have to worry about THEIR interest rates as well as our own!

BEST OF LUCK: P.M

Press SPACE or click MOUSE to continue

Can you do the impossible...

Yes Chancellor 2



Chancellor to Prime Minister
From number 11, Downing Street.

Unfortunately all these things have to be paid for.

People don't like paying taxes, but it's the only way unless we borrow
what we need.

If taxes are too high they will depress the economy and if we borrow
too much it will feed inflation.

Depression means unemployment and the inflation problem is tough
enough already with all these wage claims and strikes.

I could use the reserves to cover emergencies but I might need them
to keep the pound steady in the ERM.

It's either that or put up interest rates, or maybe even both!

Don't forget that if I don't balance the books we are out!

Yours hopefully, CHANCELLOR

Press SPACE or click MOUSE to continue

...and keep everyone happy

No, Prime Minister

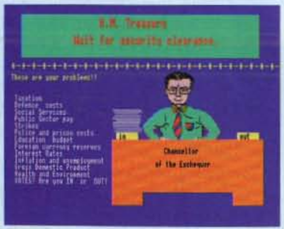
How would you deal with the economy? Marshal Anderson investigates

YES Chancellor 2 is another upgrade from Chalksoft. The original for the BBC Micro came out in 1985 and the author, Tom Tuite, a gentleman of no small experience in economics, has now produced this Archimedes version.

Taking the opportunity to harness the power of the larger machine, there is a lot of on-screen help available and plenty of explanation of what is happening. There is also a fair refinement of the modelling used to simulate the economy with recent new factors like the ERM included as well as other international effects.

The program offers four levels of difficulty ranging from Testing the water to Walking on water. It's recommended that you start with the easiest level. The game is divided up into three terms of five years, should you survive that long.

Starting with a gross domestic product of 1,000 money units you are plunged into the labyrinth of a national economy. First you set up your spending plans. Government expenditure is summed up as defence, law and order, education, social services and health. There are starting values for these and they are as good as any to get on with. Now you need to set the level of taxation which is expressed as a single percentage to keep things simple.



These are your problems!!

Taxation
Defence costs
Social Services
Public Sector pay
Strikes
Police and prison costs
Education budget
Foreign currency reserves
Interest Rates
Inflation and unemployment
Gross Domestic Product
Health and Environment
VOTES!! Are you IN or OUT!

Chancellor
of the Exchequer

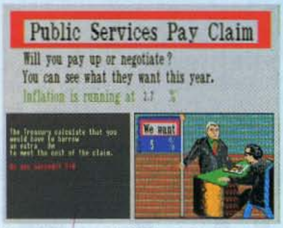
Try to keep on top of your in tray

Next you set the levels of government borrowing and reserves. Taxes may be lowered by borrowing or using reserves, but there will be a price to pay. This leads us on to public sector pay policy, where you negotiate with the unions and if you get it wrong the costs of strike action quickly bite.

The limits of ERM

Now you decide on interest rates with an eye to their effect, on the one hand on the value of the pound, and on the other on spending and investment. The ERM is unavoidable here, and you are not allowed to drop below the base value.

And here comes the Treasury with their comments and projections on your plans. This gives you a chance to alter some factors in the rest of the year if it looks like things are going seriously adrift. This data is backed up with graphs to show the way various economic indicators are moving. You need to try and get GDP rising fastest with real wages rising more slowly, so that unit wage costs can fall thus making exports competitive. You



Public Services Pay Claim

Will you pay up or negotiate?
You can see what they want this year.
Inflation is running at 1.7 %

The Treasury calculate that you
would have to borrow
an extra ... 3m
to meet the cost of the claim.

Negotiation or strike? The choice is yours

also get the chance to put some government money into an industrial project, something of fairly national importance. If the project succeeds the rewards can be high, both in terms of hard cash and popularity, but you need to be confident.

Next you get to see how overseas trade is going, looking at the balance of trade and other earnings. You also get the opportunity to affect the exchange rates and inflation by buying or selling sterling on the world market. Again you are under the constraints of the ERM.

Just in case inflation and exchange rates are still a problem – and they probably will be – you get another opportunity to alter the interest rates. Then the Public Accounts Committee come in to tell you how they think you are doing in most areas. This can be a pointer to what to do in the following year. It is backed up with a graph of GDP and inflation, so you can't say that nobody told you.

Now the public get a chance to let you know what they think. The public opinion polls will give you perceived judgments on your performance and there's no point in trying to reason with them. You see a graph of how opinion is moving which may lead you to advise on an early general election.

Once you've been through your four or five years in office you get to sit through the election. This is pretty nail-biting stuff, and nicely presented. If you manage to get through three of these and still be in power, you get a Life Peerage.

While this is really just a black box model – you shove the figures in and the program gives you a result – it is very complex and subtle. There is a huge range of factors to deal with and it will take a while to get the hang of enough of them to make good progress.

From the educational point of view this obviously has serious applications in the teaching of economics and some suggestions for teaching points are included. It also covers the National Curriculum requirements for using computer-based models.

Summing up

This really is a challenging piece of software that exploits the sheer number crunching power of the Archimedes. In the upper secondary school it should have quite wide applications in its chosen area. It is also a nice solid piece for those looking for something to play while recovering from Lemming Wrist.

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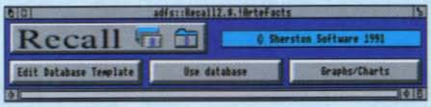
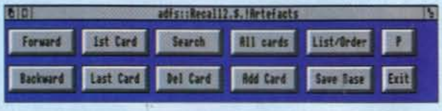
Total recall

John Clemence finds a database suitable for use in the classroom

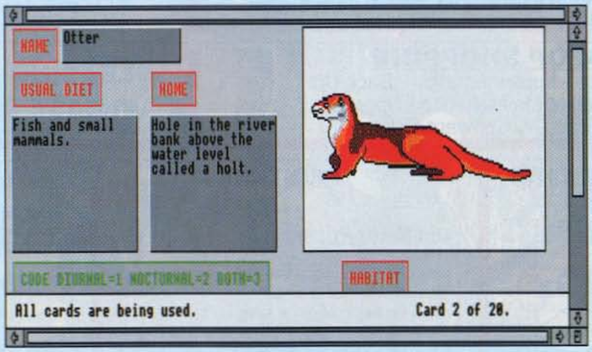
Product: Recall
Price: £39.95
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH.
Tel: 0666 840433
Requirements: Risc OS





EVER since the launch of the Archimedes, I've been looking for a database program which could be used in place of Our Facts – originally published in the MEP Infant Pack. I think I now have at least one answer in a new package from Sherston Software called Recall.

Handling small collections of data with up to 100 records it's supplied on two discs with a manual, ideas for teachers and help cards, all of high quality. The example files are educationally useful as well as showing the program to its best effect. Once loaded, clicking on the application brings three options to the screen: Edit database template which designs your data cards, while Use database and Graphs/Charts are presented in the form of large buttons.


NAME Otter

USUAL DIET Fish and small mammals.

HOME Hole in the river bank above the water level called a holt.

CODE DIURNAL=1 NOCTURNAL=2 BOTH=3

HABITAT

All cards are being used. Card 2 of 20.

A well laid out record

Selecting Edit Database Template brings to the screen a range of 11 buttons. Five of these allow you to select the kinds of fields you want to use: Text, numbers, sums, pictures or labels. Text fields can be as long as 255 characters and number fields are of fixed length with you specifying the number of decimal places.

You can remind the user of the units to be entered by adding a label field. This is a very useful option which also allows you to give a section of data cards a heading.

Picture fields allow you use small sprites – up to 40k – or Draw files of any size. The manual helpfully suggests that if you want to use a large sprite you should drop it into a Draw file first. This level of advice may be somewhat mismatched considering the intended audience for this software.

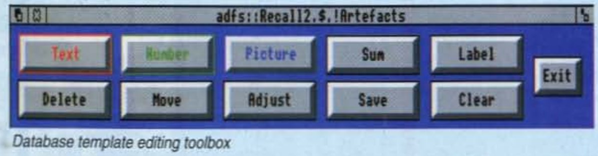
Sum fields allow the computer to carry out calculations using any numeric data – even the results of other sums. Calculations based upon the number of records in the database, such as averages, are only possible if you know that this is a fixed value where no further records will be added or removed. The four operators, + - x /, and brackets are provided for use in setting up a sum.

Three buttons allow you to delete, move and adjust fields, while three more save or clear the template and exit to the main menu. You can edit the template at any time while working on a database, so it is worth knowing that if you edit the template and delete a field all the data for that field – in each record – will be lost. No warning is given on the screen, although the manual is clear enough.

Altered images

Move is a powerful option which allows you to alter the layout of the card. This can also be carried out at any stage during the use of the database.

I found this to be very helpful while working with my class, since what may seem clear to the designer of a form is not always so clear to the user. Clicking on the name of the field allows you to move both the field heading and the area of the screen where the data is entered. Clicking in the data area lets you move it anywhere, in fact a long way from the heading if you want to.



Database template editing toolbox

The adjust button on the screen allows you to change the contents of headings, the size of sprite picture areas and the shape and size of text areas – but not after you have entered some text data. Although 50 fields are allowed I was not sure where they would all fit on the data card unless they were very small.

The database offers another range of buttons. If you are entering data you point at the relevant field, click Select, wait for the field to change colour and then either edit or enter the new data. Pressing Return puts you into the next field ready to work there. Numbers are entered in the same way, although my children found the presence of the zero before they entered anything a little distracting.

The minus sign can be entered at any stage and will be placed in the correct position by the program – a nice touch. Pictures are dropped into the appropriate field by dragging them into the database from the disc where they were stored. You do need to have saved the database at least once before you can add your pictures, because they are stored in a special directory created within the file for that purpose.

At the bottom of the screen is an information bar which indicates the number of the present card and the total number of cards. It also tells you if you are working on the complete set of data or on a selected sub-set. This bar can be toggled on/off and I had to turn it off on more than one occasion because it got in the way of the fields I had at the bottom of the screen.

Full options are provided for stepping through and searching, including quite a novel way of displaying the results of searches which can then be combined for use in subsequent enquiries and searches.

All the usual search parameters are allowed – contains, same as and does not contain for text searches, plus equal to, greater than, less than and not equal to for number searches. Data can also be sorted on any text or number field. The search routines ignore upper and lower case lettering which means that the graph routines treat them differently.

The final option from the main menu is to produce graphs and charts. Bar, line and pie graphs are supported, though the bar and line graphs have their labels written on the graph which can look a bit messy.

Recall will attempt to draw any of the three graphs, regardless of the nature of the data. This often produces some very muddled pie charts. But I actually welcomed this feature because it represented an important issue for discussion with the children.

It would be nice to be able to have a scatter graph option, so that relationships between various number fields could be explored visually. Graphs can be saved as Draw files which makes them easy to use in other applications.

Summing up

This is a package of high quality with nearly all the facilities you need in a primary database manager, plus many useful on-screen prompts. I thoroughly recommend it and will be using it extensively in my classroom

BBC BASIC Version 3

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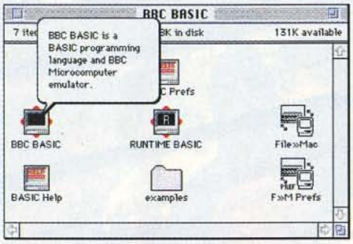


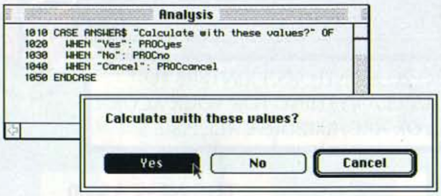
BBC BASIC is a BASIC programming language and BBC Microcomputer emulator.

Balloon help provides instant information about the menus and dialogue-box options.

Save Graphics option saves the BBC BASIC graphics screen as a PICT file that can be loaded into other programs.

Runtime BASIC utility converts your BASIC programs into stand-alone double-clickable Macintosh applications.

Macintosh-style interactive editor provides a scrolling view of program listings with convenient cursor or mouse editing. You can work with any font available on your system and you can display keywords highlighted in bold for easy reference.



```
1010 CASE ANSWER$ "Calculate with these values?" OF
1020   WHEN "Yes": PROCyes
1030   WHEN "No": PROCno
1040   WHEN "Cancel": PROCcancel
1050 ENDCASE
```

Calculate with these values?

Macintosh Toolbox interface allows you to define your own menus, dialogue boxes, and scrolling lists using convenient BASIC keywords, and use the standard file dialogues for opening and saving data files.

Dynamic tracing and debugging lets you run or step through a program, highlighting each statement as it is executed, and you can display the values of any variables or expressions.

Comprehensive help system gives you instant information on keywords and operators, without interrupting what you are doing.

...with the best of the BBC Microcomputer:

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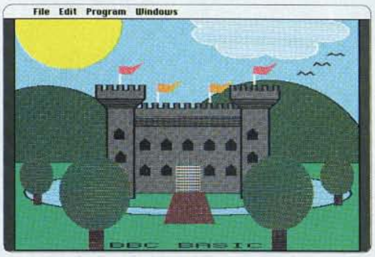
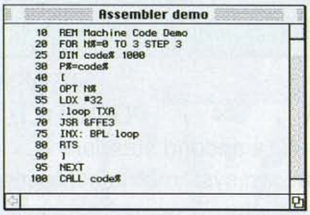


Emulates BBC Microcomputer graphics and screen modes, including Teletext. Work in full colour on an LC or Macintosh II, or grey shades on a monochrome Macintosh.



```
 10  REM Machine Code Demo
 20  FOR N%=0 TO 3 STEP 3
 25  DIM code% 1000
 30  P%=code%
 40  [
 50  OPT N%
 55  LDX #32
 60  .loop TXA
 70  JSR &FFE3
 75  INX: BPL loop
 80  RTS
 90  ]
 95  NEXT
100  CALL code%
```

Built-in assembler and 6502 machine-code interpreter allows you to compile and run 6502 assembler programs, or machine code which you have loaded in directly.

Full emulation of the BBC Microcomputer Operating System including all the standard system calls and vectors, OSBYTE, OSWORD, *FX calls, VDU codes, function keys, sound, and DFS/ADFS commands.

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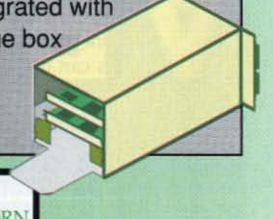

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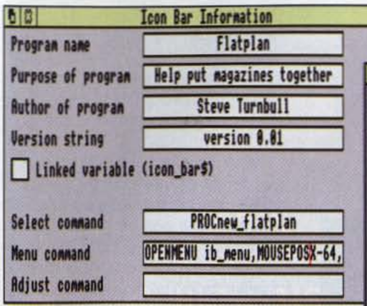
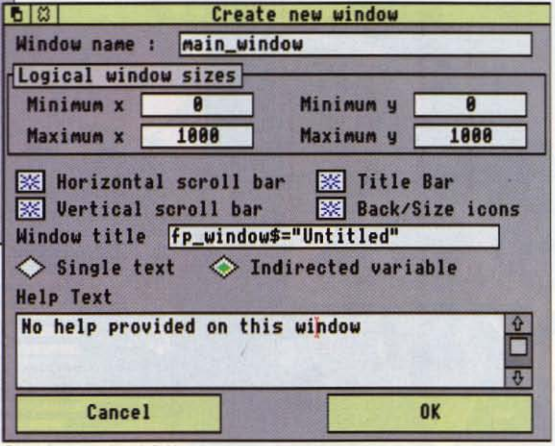


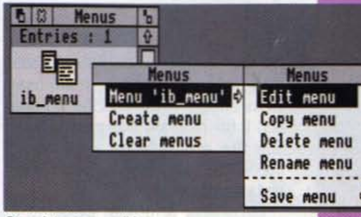
Program name: Flatplan
Purpose of program: Help put magazines together
Author of program: Steve Turnbull
Version string: version 0.01
☐ Linked variable (icon_bar$)
Select command: PROCnew_flatplan
Menu command: OPENMENU ib_menu,MOUSEPOSX-64,
Adjust command:

Setting up your info box



Window name : main_window
Minimum x 0 Minimum y 0
Maximum x 1000 Maximum y 1000
☒ Horizontal scroll bar ☒ Title Bar
☒ Vertical scroll bar ☒ Back/Size icons
Window title fp_window$="Untitled"
◇ Single text ◈ Indirected variable
No help provided on this window

Preparing a window definition



Complete menu editing

Wimps made easy

Steve Turnbull investigates a new method of programming the Risc OS machines

ONE of the best features of the original BBC Micro was the ease with which it could be programmed. BBC Basic was easy to use and powerful, while the operating system was very accessible via the various system calls: FXs, Oswords and star commands.

The 32-bit ARM-based machine follows this tradition of accessibility, making it another that dabblers can really get their teeth into. Except for one thing: It's very complicated.

On the old Beeb you could read a tutorial that went into considerable depth about the machine itself and come out the other end able to do some clever things.

Tutorials now barely scratch the surface of just the applications – the Risc OS reference manual alone is four volumes long.

Help for dabblers

So the dabblers give up. Who wants to spend days reading up on the Wimp system just to be able to stick a window on the screen? There's just too much to know.

But help is at hand in the form of HelixBasic. It's a programming language that looks like BBC Basic on the surface but has many extensions that make using the Wimp system a doddle. In fact you will never make a SYS "Wimp_Whatever" at all.

To write a HelixBasic application you create an application directory with the usual !Boot, !Run and !Sprites files. The !RunImage is the HelixBasic interpreter while the program itself, called BasicProg, is a text file. There may also be a Resources directory.

When you double-click the application the interpreter is loaded and it reads in the BasicProg, tokenising it as it goes. You may get some error messages at this read-in phase. These are reported with line numbers and if you're using Edit to create the program you can just go to this line to correct it.

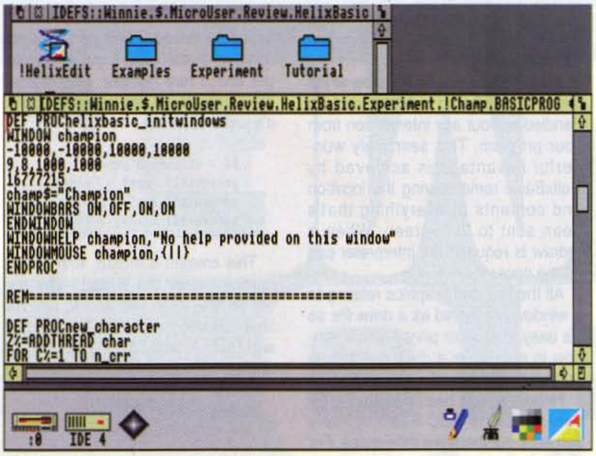
Once loaded the icon appears on the iconbar and your program is ready to run. Some examples are supplied: There's a demo that displays some changing information in a window, including text, draw files and sprites, and any screen can be saved as a draw file.

Another draws lines to wherever you click the mouse, then you can save the result as a draw file. A further one displays products and prices, lets you select one and puts up further information about it. Or you can do a search.

The line drawing program is less than 1k long, the prices one is 6k while the demo is 8k.

A HelixBasic program is event-driven which means that things happen in the program when the user does something at his end.

For example if he clicks Menu on the iconbar icon, this event is passed to the program which should have an action set up to deal with it – in this case an iconbar menu should be displayed.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!HelixEdit
Examples
Experiment
Tutorial
IDEFS::Winnie.$.MicroUser.Review.HelixBasic.Experiment.!Champ.BASICPROG
:0
IDE 4

```
DEF PROChelixbasic_initwindows
WINDOW champion
-10000,-10000,10000,10000
9,0,1000,1000
16777215
champ$="Champion"
WINDOWBARS ON,OFF,ON,ON
ENDWINDOW
WINDOWHELP champion,"No help provided on this window"
WINDOWMOUSE champion,{||}
ENDPROC

REM========================================

DEF PROCnew_character
Z%=ADDTHREAD char
FOR C%=1 TO n_crr
```

Creating a HelixBasic application in Edit

How it works

This is the way Desktop C works too, but the HelixBasic interface is much simpler though not as versatile. Using an example is the best way to show how easy HelixBasic is so let's take a look at some parts of the demonstration line-drawing program:

```
PROGRAMINFO "!Mouse","Demo the
mouse","Phill Kent","1.00f"
```

This is the first line and it defines what's to appear in the Info box that every Wimp program should have. In addition *!Mouse* is the name of the icon that will appear on the iconbar.

There's an extra option to add a parameter like *icontext$="Nothing"* which puts the text contained in the variable *icontext$* below the icon on the bar. The clever thing about HelixBasic is that to change the text on the iconbar all you have to do is alter what's in the variable like this:

```
icontext$="Fredfile"
```

This rule applies all the way

➤

Product: HelixBasic
Price: £99.95
Supplier: Craddock Computer Systems, 20 Osyth Close, Brackmills Industrial Estate, Northampton, NN4 0DY.
Tel: 0604 760991
Requirements: Risc OS

➤
through the program. You can attach variables to parts of the Wimp, like the title of windows, dialogue box buttons or text information. If the user clicks buttons this affects the variable and if the program changes the variable this is reflected in the Wimp. It makes for a very simple, easy-to-use and versatile interface.

Let's take a look at creating a menu:

```
filename$="Drawfile"
MENU main_menu,"Mouse",-1
ADDMENU main_menu,"Info",INFO
ADDMENU main_menu,"Save Draw",SAVE
,COMMAND {|SETSAVE filename$,"file
_aff","Save Draw",save_procedure,&
AFF}
ADDMENU main_menu,"Print",COMMAND
{PRINTWINDOW New_window,0,0,100,1}
,BAR
ADDMENU main_menu,"Quit",COMMAND {
END}
```

Although this looks complicated it's really quite straightforward. The MENU command creates a new menu with the identifier *main_menu* and the title Mouse. The -1 defines the width of the menu should be calculated from the width of the menu items.

ADDMENU adds a new option to the specified menu, the text specifies the option name – this could be a variable. It's followed by options controlling whether it's ticked, greyed out, followed by a dotted line, links to a window, save box, colour selector box or sub-menu, what commands should be carried out or whether the entry contains editable text.

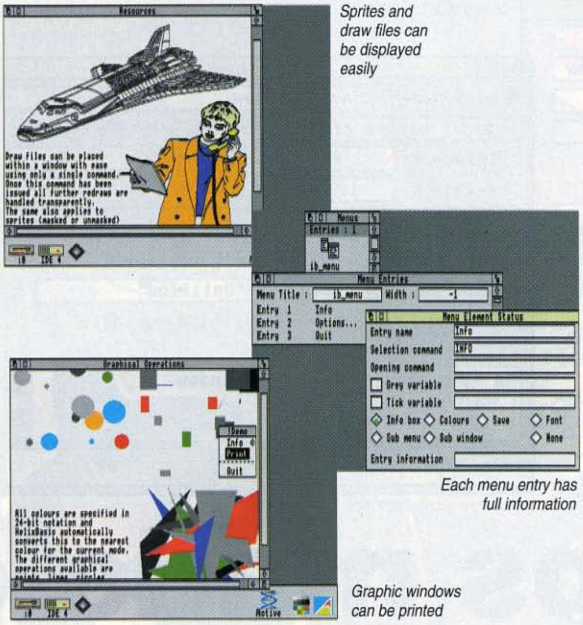
The COMMAND option allows HelixBasic commands to be executed when the option is selected. In the case above the Save draw option links to a save box, and the SETSAVE command will be executed when the user actually moves the arrow across to open the save box.

Windows

Any instruction before the '|' would be executed if the menu option itself is selected, rather than going to a sub-menu or dialogue box. The Print and Quit options show this. The option INFO automatically adds the Info dialogue box.

The contents of any COMMAND must be a single instruction, but it could be a procedure call which itself can contain many commands and other procedure calls.

Windows are defined by the WINDOW command and OPENWINDOW will bring it on to the screen. There are a lot of commands related to windows, which reflects their versatility in Risc OS.



Draw files can be placed within a window with ease using only a single command. Once this command has been issued all further redraws are handled transparently. The same also applies to sprites (masked or unmasked)

Menu Title : ib_menu Width : -1
Entry 1 Info
Entry 2 Options...
Entry 3 Quit

Entry name: Info
Selection command: INFO
Opening command:
☐ Grey variable
☐ Tick variable
● Info box ◇ Colours ◇ Save ◇ Font
◇ Sub menu ◇ Sub window ◇ None
Entry information:

All colours are specified in 24-bit notation and HelixBasic automatically converts this to the nearest colour for the current mode. The different graphical operations available are points, lines, circles

Sprites and draw files can be displayed easily

Each menu entry has full information

Graphic windows can be printed

With a single instruction you can add a toolbox, add or remove either of the scroll bars and provide the interactive help.

Another option, reminiscent of the Apple Mac, is the ability to add any number of scroll bars within a window. These are attached to a variable and the user can then scroll the bar to alter the variable's value.

Screen redrawing

One of the very awkward parts of handling the Wimp comes when redrawing the screen. For any complex program this becomes a nightmare of comparing the current graphics window with objects within the screen and deciding what should be redrawn.

In HelixBasic you never know when the screen is being redrawn, and it's handled without any intervention from your program. This seemingly wonderful advantage is achieved by HelixBasic remembering the location and contents of everything that's been sent to the screen. When a redraw is required the interpreter can do the necessary.

All the text and graphics relating to a window are stored as a draw file so it's easy to save or print a whole window in one go as a draw file. This is provided automatically.

HelixBasic has been designed to be very similar to BBC Basic in many respects, but there are differences. For example there are no multi-statement lines and although there are the familiar LINE, RECTANGLE and other commands they are altered to allow the window and colour to be specified.

There are the window extensions mentioned briefly above, but the major programming extension has been the inclusion of Threads. Nothing to do with sewing, nuclear war or dragons, a thread is what Pascal calls a Record and C calls a Struct.

It's a method of defining a collection of different variables as a group and then creating a whole string of these collections – in fact as many as you want. For example:

```
THREAD person, name$, age%, height
```

defines a thread called *person* which contains three fields, a string, an integer and a real number. This in itself does not use up any memory space, it's just a definition.

```
N% = ADDTHREAD person
person(N%).name$ = "Fred"
person(N%).age% = 23
person(N%).height = 179.4
```

This creates a thread, with *N%* its number within the thread – the first will be one, then two and so on. The lines following define what each field within the thread is equal to. A quicker method is this:

```
N% = ADDTHREAD person
("Fred",23,179.4)
```

Another way of describing a thread is as a two dimensional array of variable length, where each column of the array can be a different type. There are commands for loading, saving or deleting threads, searching through for certain information and so on.

HelixBasic isn't a complete solution for Wimp programming, the techniques used to make it easy to create the programs also bring about disadvantages.

For example, detailed editing of sprites, drawfiles and text becomes difficult, if not impossible.

The editor

A special HelixBasic editor is supplied but the one on review was a very early version and as such was quite unstable. Even so the main features worked, and it's been written in HelixBasic, which shows that serious applications can be created.

When it's booted up you get four windows. These allow you directly to create, modify or delete windows, menus, procedures and functions. You just double-click on the item you want to edit and the appropriate dialogue box appears.

When the program is saved it creates the text file that will be processed by the interpreter. Even when the editor is bug-free I suspect it will only be used by the less experienced programmer as it doesn't provide the ability to jump to different parts of the program for a quick look.

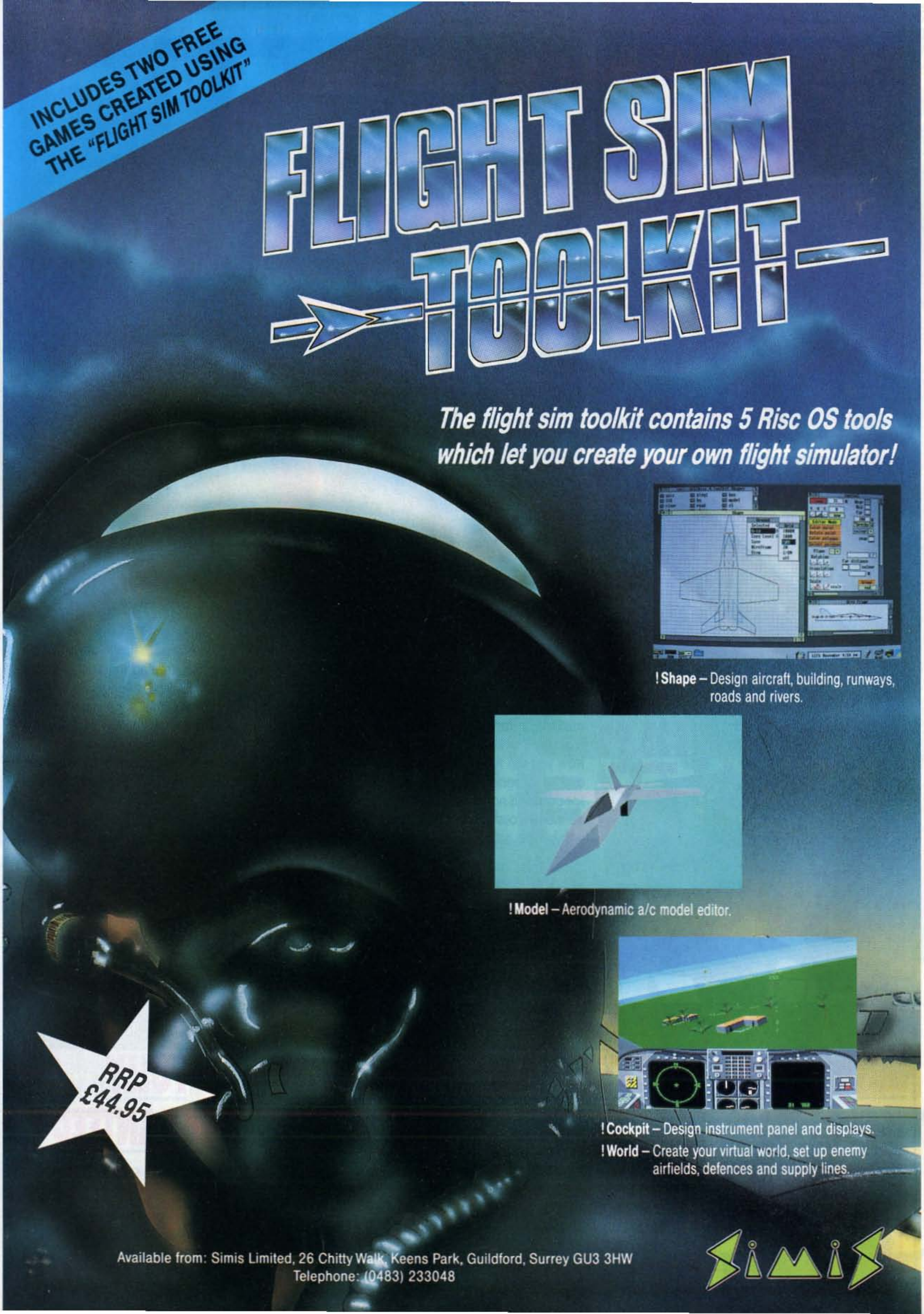
A new version of the editor is being written in ARM code which will avoid the problems with speed and provides the ability to view different parts of the program simultaneously.

Summing up

Craddock Computer Systems thought initially that the main market for HelixBasic would be teachers who want to create multi-tasking programs with essentially simple contents.

However anyone who wants to write multi-tasking Basic programs, but doesn't want to learn the ins and outs of the Wimp, will find HelixBasic suits them very well. And it's perfectly capable of handling quite extensive applications.

This is an excellent program, and is probably what Acorn should have written to go with the Risc OS Wimp system. It makes the Archimedes into a dabbler's machine, just like the old BBC Micro.



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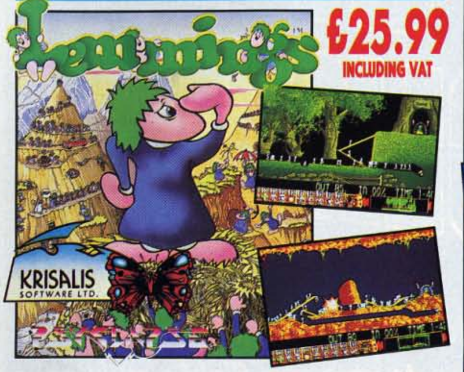
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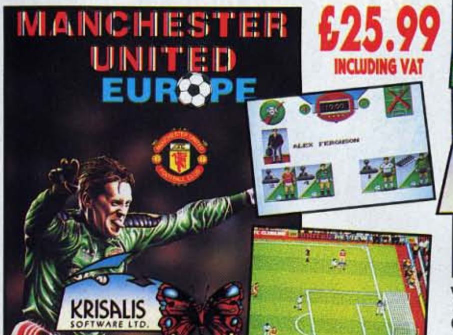
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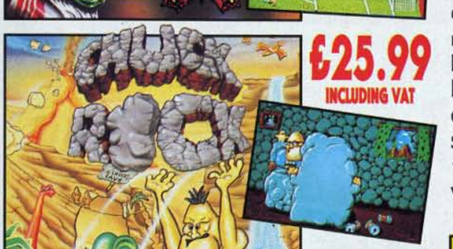
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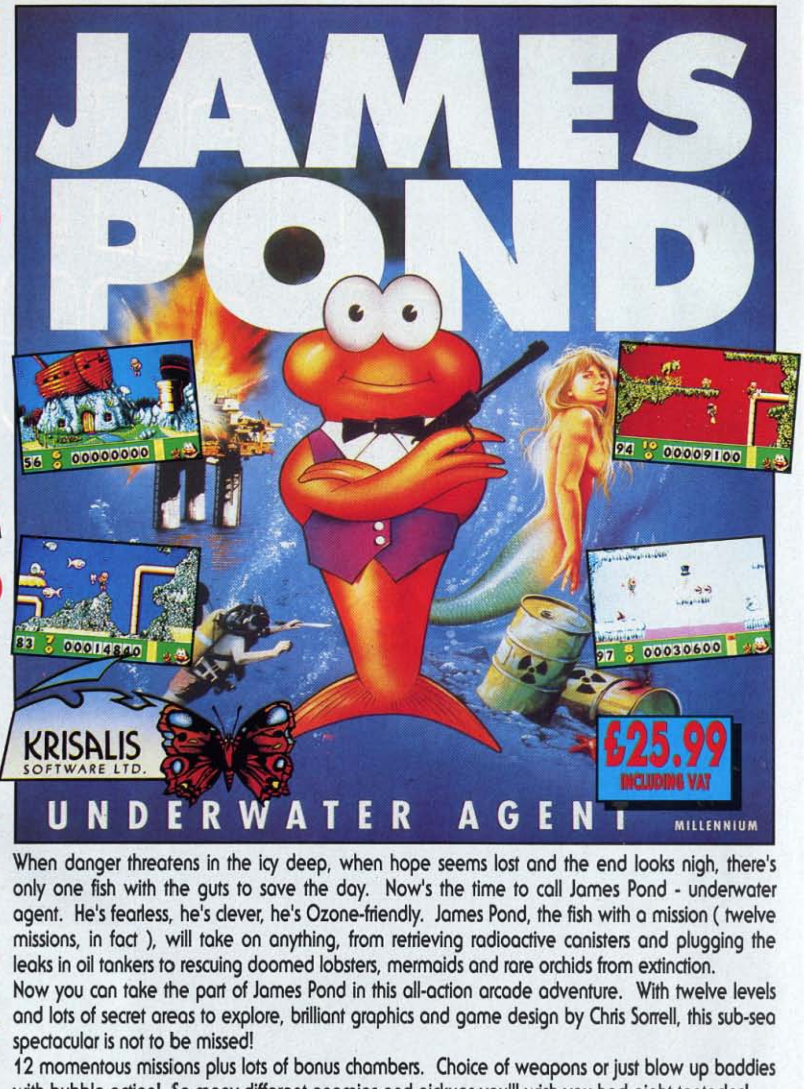
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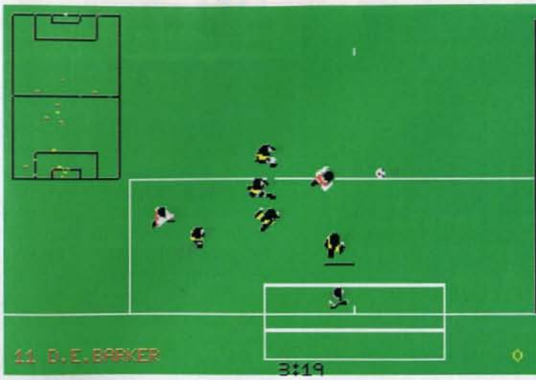
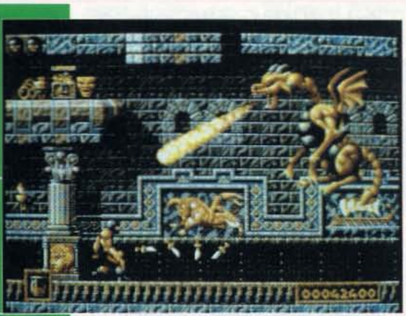


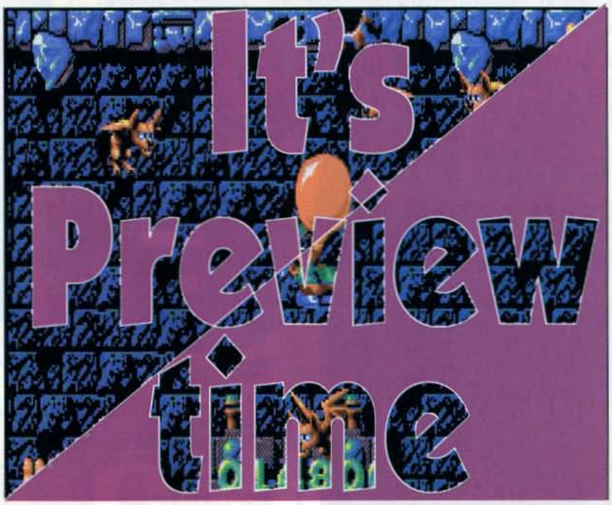
Let's hope for Kick Off 2



Make like a god

Screen Play CHAT

Newcomer Ben Riley starts a regular look at the games scene



It's Preview time

IF you didn't know before, let me tell you that there are going to be quite a few spankadelic 16-bit titles unleashing themselves on the unsuspecting 32-bit Acorn-owning world. So just what are Populous, Powermonger, SWIV and Nebulus 2 – apart from computer games?

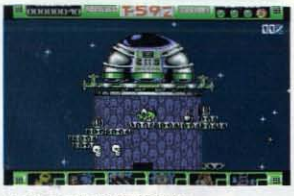
Well, **Nebulus 2** is a funny sort of platformy, jumpy, shooty and go-up-a-towery sort of thing. It wasn't very well received when it was released last Autumn, but I suppose the game-starved Archie market will welcome it with open arms.

Gods is another story, being one of the most fantastic arcade adventures ever to come out of a home computer. It's written by the cult programming duo *The Bitmap Brothers*. They've had a series of massive successes with classics like **Speedball**, the imaginatively titled **Speedball 2**, the Pandora's Boxesque **Cadaver** and **Magic Pockets**.

Though it isn't going to win the *Game most likely to be called 'Original' by some pouncey overpaid (oh yes? Ed) techno-journalist* award, **Gods** could well get the *Game with loads of Power-ups* as you can collect crystals, go to the nearest cornershop and buy some sherbet-dips or even some gob-stoppers (are you sure? Ed). Nope. The whole thing looks like a sex demigod and plays like Gazza (without the broken leg).

There are only two ported games likely to win the *Better than Gods* award. Here's your starter for 10 – name one of them? It begins with P and is an anagram of Opulousp, it's the fave rave of the famous East Ender star Mr. Populousadopulus – the one that owns the launderette.

Populous is the game for David Ike's dad – God. You play one god who's out to destroy another who's on your turf. The view shows a really nice – and really huge – isometric landscape over which you do battle and you can scroll around it to your heart's content.



Getting to the top in Nebulus

Being a god you don't actually do the dirty work yourself, you get your very own god-fearing masses to wipe out the other's followers. You can create hills and mountains, or flatten them out to create arable land so your followers can build huts. Given enough time and space the huts change to houses then, with enough close together, you get forts. Terrific!

The more people that worship you the more your manna builds up. You need it to manipulate people and change the landscape, but if you get enough of the ol' manna juice together you can create natural disasters and inflict it on your opponent's people – floods, earthquakes, volcanoes – they're all here.

The control system is point and click with the mouse. There are piles of icons round the edge of the playing area. The graphics are brill and watching your chosen people do your bidding is a real ego trip. A tip top game, maybe only superceded by...

Powermonger – a pretty meaty name for a pretty meaty game written by the same team who created Populous. It looks pretty similar at first, but it isn't.

The story line is that you and your band of followers have had their land destroyed by an act of God and you've fled in boats. You come across a green and pleasant land that would suit the peeps to a tee – but it has some war-lords in it.

Once again the main playing area is an enlarged section of a main map with icons to let you scroll around. The main view is composed of polygons instead of sprites so it can be rotated and you can see behind the hills and mountains – in Populous you'd have just knocked the mountain down. You can manipulate the people too – they all have different skills and personalities.

You can lay seige to a town or go for an all-out attack, or you can pretend to be friendly and trade while sending in spies to case the joint.

You can also make alliances if you don't rate your chances – you could even cover yourself in glue, roll around a chicken pen and jump off the Telecom Tower while reciting the Belgian Sausage Size Act of 1984. This last option may not be implemented.

All these games are being ported by Krisalis and should be out in the next few months. I would really like to see **Kick Off 2**, the greatest home computer football game of all time and something like **The Secret of Monkey Island**, a superb graphic adventure.

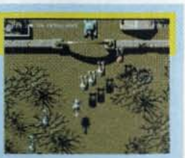
- *You got any suggestions of what you'd like to see? Bye for now, good buddy.*

Shooty bang bang

SWIV. (Same to you. Ed) Oh gawd, don't you know anything? SWIV (say that again and you get a knuckle sandwich. Ed) is a vertically scrolling shoot-'em up. You get control of a helicopter and, wait for it, a jeep. A jeep? Who wants to be a jeep?

Clearly the jeep option is for people with annoying younger siblings who always want a go of your top game. Till now you've always told him to go and play on the motorway, but now you can say: "Here Timmy, I'll be the chopper and you can be the jeep, but you can only have one go."

Timmy will last seven seconds and you can say: "You've had your little go, now go away before I wrap this cricket bat round your head. Is that the sound of the ice cream van on the motorway? Here's two pence, treat yourself."



Yessiree, Jim Bob, this is a tough game, and near impossible with the jeep. It scrolls upwards continuously, and it don't stop for levels. There's an above average amount of carnage and killing with lashings of power-ups and ginger beer.

It's reputed to be the best shoot-'em up in the 16-bit market and, hey, I ain't gonna disagree with that kind of fire-power.

European Mah Jong – the Game

... listen for the sparrows

MAH Jong is sometimes referred to as the Great Wall of China and is an ancient game from – surprise, surprise – China. Originally played with tiles on a table or floor, the European version is significantly more complicated than the original game I learnt.

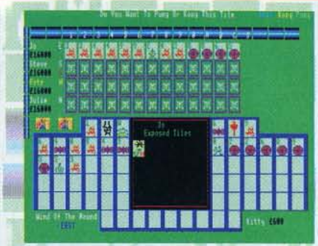
After a judicious reading of the manual and on-screen help files, I felt ready (-ish). Don't expect beautiful graphics animation though, it's not that type of game.

A set up screen allows you to select the skill level and what type of game you want to play – quick or slow. Two dice are thrown to decide where to break the wall to deal. You start first as the east wind, followed in turn by the other players. In turn, you discard tiles and take new ones from the wall of tiles. You can claim the last discard on your turn to form a Pung – a set of three, a Kong – set of four or a Mah Jong to win the game.

When you have completed your hand of 13 tiles and need only one more to Mah Jong you are said to be fishing. There is an option to go fishing in the menu box which appears on your go, or by using the sort option to realign your tiles, the program will automatically send you fishing.

This is the same menu box for accessing the help files, tagging tiles and discarding tiles. Control is via the keyboard and/or mouse and you can decide which you prefer.

I am not going to go into the wonders of all the rules – that is part of the fun of the game. But whopunging is very nicely done. If you have two or three tiles of a kind and one is discarded, the computer asks you if you want to pick up this discard to form a Pung or Kong. You might decide at this point to change your hand for one which scores less but might enable you to finish first and therefore claim the kitty – oh yes there is a gambling element too.



A sharp eye is needed at all times

It is also a nice bit of strategy, especially if someone has gone fishing – donated by a small F by their hand – as two people will miss a turn as the next player to go is the one next in rotation from the whopunger. If you are still with me so far, then let me tell you that this is the easy part.

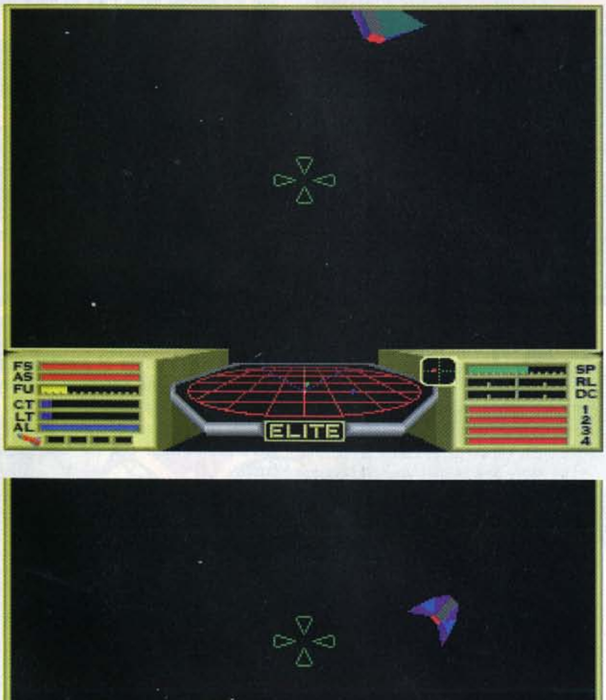
Price: £24.95
Supplier: CIS, Suite 2a, 436 Essex Road, London N1 3QP.
Tel: 071-226 3340
Requirements: Risc OS

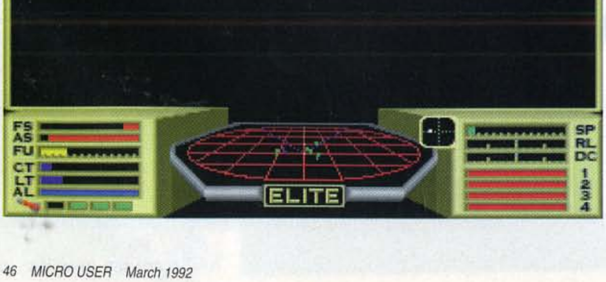
My congratulations must go the to the programmer who has managed to create an enjoyable game which tells you what is going on, and gives you information quickly and accurately. It's suitable for someone wanting to learn the game from scratch, or for people who are rusty and need some practice. The other three players can be moderated by the computer and are pretty good even at the easy level.

Win and you score points in line with the hand you've declared and a nice wad of cash. If there is stalemate or dead hand, the Goulash comes into operation. This is the same as the quick game with each player swapping three tiles between themselves before play and the addition of four blank wild cards to the pack. The game then pro-

Elite

... sure shot





Price: £39.95
Supplier: Hybrid Technology, 88 Butt Lane, Milton, Cambridge CB4 6DG.
Tel: 0223 861522
Requirements: RiscOS

HAVING played Elite for a few months now, we decided it was time for an update review, after all first impressions can be deceiving. Well, they weren't.

The first run of Elite packaging was provided in something of a hurry, and as such there were a couple of things missing. The Gold edition contains a whole set of ship identification cards plus sheets to record trading prices – something I could have done with the very first time I ever played all those years ago.

Elite is protected by a double password system. On entry you need to find a word in the manual, from then on you can play and return to the Desktop if you're in flight but you can't save the current position. If you exit to the Desktop when docked you have to find another word in the manual before leaving and then you can save.

This double password system doesn't interfere with the gameplay and it's certainly preferable to some other protection methods. If you get the password wrong on entry the whole program vanishes and you have to re-boot. But if you get it wrong at the end you do get a chance to retry.

If you transfer the program to a hard disc or some other media you can still play, but all the trading prices are zero and there's never any cargo. It's useful for practising docking manoeuvres.

As with the original BBC Micro version, docking is the hardest part, and usually by the time you've earned enough money to buy the docking computer you'll have learned how to do it. Still the computer makes it much easier.

However there is now the auto-dock facility available at some space stations. If you choose the right planets for earning your early credits you can use the auto-dock to reduce the overall playing time. Instead of the trips being wasted by failing to dock successfully.

Unlike in the original program you will find that the Police Vipers are now an active bonus.

They will come to your aid if you are beset by pirates. Their aim is good and a nest of Vipers streaming out of the black is a welcome sight to the lonely trader.

Once your finances are up to a reasonable level and you've equipped yourself with the front military laser, side mining laser, extended cargo bay, ECM, enhanced energy unit and dockceeds in the normal way. There are 40 hands to choose from. These are outlined in the manual or you can call the details up on screen. If you don't know which to go for you can sort your dealt hand and will be told how many tiles you have which can be used towards creating this hand.

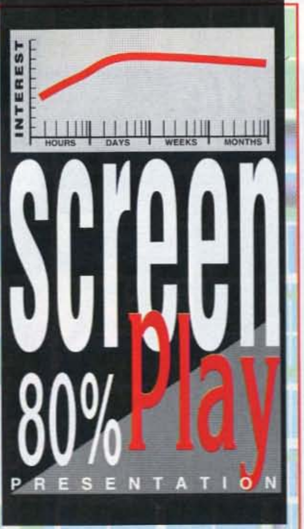
Choose Sort on the menu and a list of the 40 hands will appear. Scroll through this and press the spacebar on the one you want. Time consuming but a good way to learn and there is no time limit.

I found that the most successful hands on the easy level were *Knitting* and *All pairs*. But if you are adventurous you could try *Plucking the plum blossom from the roof* or *Hug's choice, Hitler's blunder* or even *Gertie's Garter*.

The key is concentration. By watching the tiles placed in the discard, you can tell if it is worth trying to create a particular hand. But pay special attention to the tiles other people have declared – placed openly in front of their hand. This should give you a good idea of what they are collecting.

There is a great deal to Mah Jong and to go into the rules in detail could well deter you from picking up this game. Unusual, taxing and time consuming as it is gets more addictive the more your play and improve.

Jo Giles



ing computer, you're ready to begin playing properly.

And you can choose your occupation. Either continue trading, which is always a good move anyway, or become a bounty hunter spending a long time in deep space and running the risk of being jumped by just too many pirates. You could be a pirate – a risky business – go for the asteroids or become a scavenger.

Asteroid mining requires patience especially as asteroids do not show up on the scanners. You must make a jump, check all the view screens, then make another jump and so on. When you do encounter a clump of asteroids you'll probably find at least two miners already at work – and they will clean up an entire clump in very short order. Scavenging is an option provided by the Police – find a group of Vipers and then fly along with them. Eventually you'll come across some pirates, the Vipers will attack and you can pick up the pieces.

There are a number of missions. The first involves saving a starving planet by depositing a Genesis device into the atmosphere. Unfortunately you have to get very, very close. One of the excellent little touches within this version of Elite is that the planet is described as *a starving world* before you help, but sometime later it becomes *a poor world with some hope*.

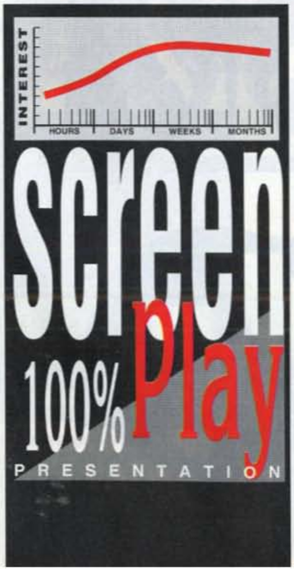
It's a pity there aren't more of these communications, but then this is Elite not Karma. But if you find that your legal status is no longer clean and you're in sight of some missionaries you may be told to mend your ways.

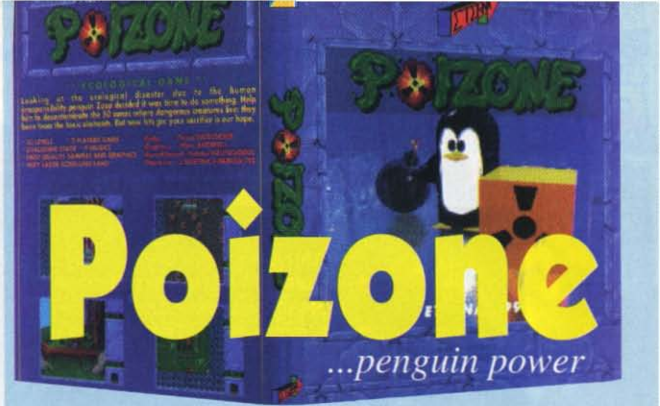
Another mission involves disposing of a traitor who's running information to the Thargoids. This one is hard: He's got a ship that you'll instantly recognise and it has rechargeable power packs and ECM, unlike most non-player ships. Not only that, he's always accompanied by a wing of Cobras.

The only solution is to zap the Cobras with an energy bomb, close in fast, pile in with the lasers and, if you can get close enough to bypass the ECM, use missiles. But it can be done on lasers alone.

Archimedes Elite is the original with a few frills. So if you're looking for a complete upgrade it probably isn't for you. It was never intended to be anything else – but until now you couldn't play Elite on the Arc at all. It's superb.

Steve Turnbull





Poizone

...penguin power

Price: £19.95
Supplier: Eterna/Vector Services, 13 Denington Road, Wellingborough, Northants NN8 2RL.
Tel: 0933 279300
Requirements: Risc OS

PENGUINS must be very hardy creatures, not only do they live in the extreme climate of the Antarctic, but they prosper against natural predators. But other inhabitants of the world – humans – are not only curious about Zozo and his friends but are polluting their environment.

The ecological message is very strong in this game, but this doesn't detract from the quality and polish of the gameplay and addictiveness of Poizone – poisonous zone?

Zozo as you probably will have guessed by now is a penguin. Decked in the usual black and white ensemble, he is very handsome and strong – how many penguins do you know who can push DDT and CFC containers around?

In this one or two-player game you naturally enough start life in the snowy wastes. Your task is simply to remove at least 90 per cent of the CFC canisters and jars of a variety of noxious substances.

You must clean up in a certain way so do pay special attention to the introductory screens, which will tell you the dos and don'ts of hazardous substance removal. Some items can be thrown, some crushed, but others can only be removed by one particular action. Get it wrong and you could find yourself out for the count.

You can toss stone blocks around, which is your only defence against the mutated inhabitants of your world. Looking like the ghosts from PacMan who got out of bed on the wrong side, they will think nothing of knocking you out. They don't kill you but as this is a race against time, every second counts.

Different levels provide more dangerous hazards and more manic opponents, making the ghosts appear comparatively benign. But time is your biggest enemy though there is a password option available.

The graphics, digitised speech and enjoyable music are absolutely superb with good scrolling, fast action and lovely animation – watch Zozo's wing when you toss some rocks around.

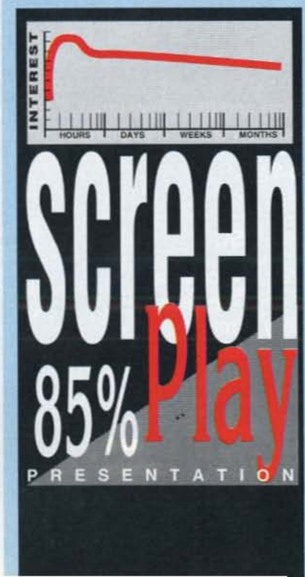
Though cute this is not an easy game to play and Zone Two kept me busy for a good few days until I discovered the sequence of puzzles to solve. The baddies move randomly, leaving you hoping they are not waiting for you this time around.

There are 50 levels in total, and the blocks as well as hazards and mutants change as you progress. The transportation blocks give you a lovely view of the playing area, while the classic one-way blocks are as infuriating as ever.

Power pills will enable you to avoid the bad guys and clip them with a passing rock then they'll be out for the count too. Bonuses are achieved by killing the mutants and for assembling the diamonds in the correct way – this is very much a case of trial and error.

Simple, well executed and thoroughly enjoyable. Definitely recommended.

Pam Turnbull



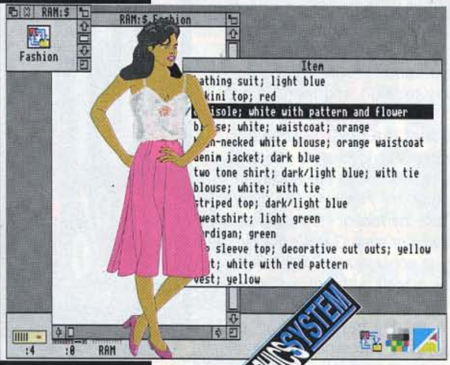
The smArt Suite

All 4Mation packages for the Archimedes carry a FREE SITE LICENCE.

smArt SmArt is a Linked Graphics System. When picture files are loaded into smArt, different parts of the picture can be changed by making selections from a menu. The graphics components are automatically scaled so that the parts always fit. Pictures may be saved as Draw files or transferred to DTP programs or any other applications which can handle Draw files.

The smArt package comes with over two dozen files on subjects ranging from shops to cars, and churches to British Isles maps. Available as separate products are discs of smArt files on specific themes such as Leisure, Heraldry, Faces, Fashion, Homes, Trees & Gardens, and Dinosaurs.

smArt £55 (NZ$ 198)   smArt discs £16 (NZ$ 59)

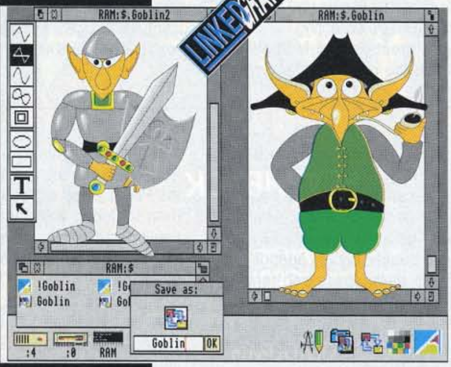


athing suit; light blue
kini top; red
isole; white with pattern and flower
b se; white; waistcoat; orange
n-necked white blouse; orange waistcoat
denim jacket; dark blue
two tone shirt; dark/light blue; with tie
blouse; white; with tie
striped top; dark/light blue
weatshirt; light green
rdigan; green
sleeve top; decorative cut outs; yellow
t; white with red pattern
vest; yellow

filer smArt For those wishing to create their own smArt files, smArtFiler is an application which compiles smArt files from your source Draw files. Full instructions are provided along with lots of examples. Individual components may be scaled, rotated, and placed in front of or behind other components. Menu entries may be specified.

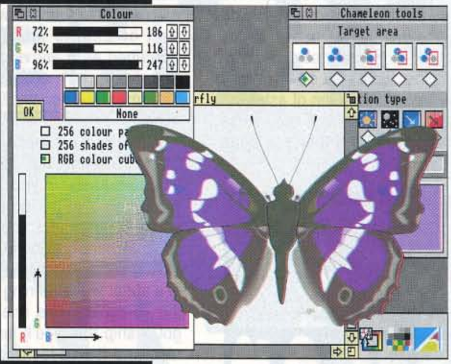
If it can be drawn it can be a smArt file.

smArtFiler £35 (NZ$ 129)



Chameleon Chameleon is an ideal companion to smArt, and a must for anyone who needs to make quick and easy colour changes to Draw files. As well as palettes for 16 and 256 colour modes, there are options for 256 shades of grey and a RGB colour cube which provides thousands of colours. Colours may be selected from other Draw files so can be copied from one picture to another. Colours may also be changed in HSV values; Hue, Saturation and Value. Edited files may be saved as normal Draw files or as colour separations. A clever Undo and Redo facility allows virtually any number of colour changes to be cancelled and then reinstated. Zoom and Magnification facilities allow accurate editing of small areas.

Chameleon £25 (NZ$ 95)



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Send us a blank disc to receive a demo copy of smArt and Chameleon. Only the save facility is missing. Poster demo also available.

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Jiglet	£29	NZ$120.00
DTP Seeds*	£ 8.45	NZ$ 35.00

* (book - no VAT)

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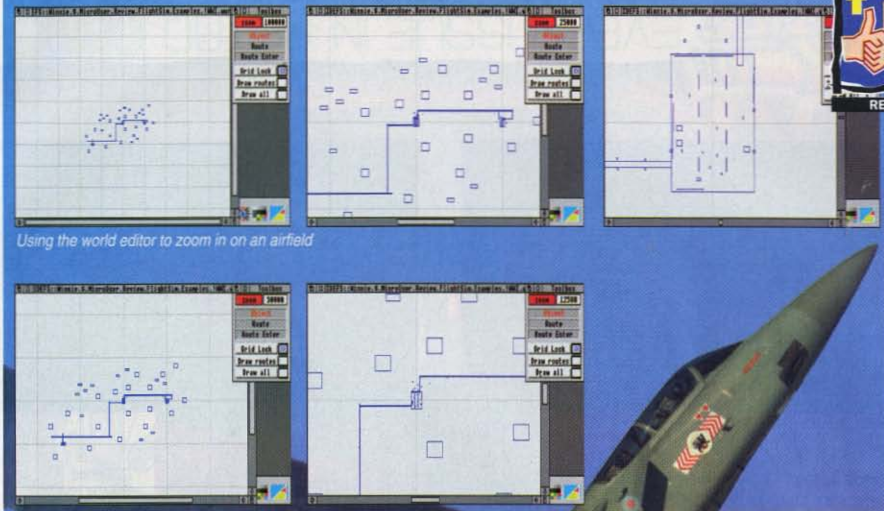

Using the world editor to zoom in on an airfield

Flight of fancy

With his head in the clouds and an eye on the ground, Steve Turnbull assesses a new concept in aircraft simulation

Product: Flight Sim Toolkit
Price: £44.95
Supplier: Simis Ltd., 26 Chitty's Walk, Keens Park, Guildford, Surrey GU3 3HW
Tel: 0483 233048
Requirements: Risc OS

INTERDICTOR and Interdictor 2 by Simis were landmarks in aircraft simulations. Apart from being designed by specialists and professionals in the field, they created a virtual environment where things happened beyond the player's plane.

Enemy planes took off, cargo planes carried trucks, supply vehicles travelled from depots to hangars – and it all happened while you were busy trying to knock down the planes, blow up bridges and generally attempting to save the day.

Following their success Simis went off to produce Mig-29 and Mig-29 Superfulcrum on all 16-bit machine formats as well as the Archimedes. Now they're back on the Acorn machines with a version of the software used to design the games.

The Flight Sim Toolkit provides five multitasking utilities that you can use to build your own simulation. It comes in a stylish box with two discs, one for the applications, the other for examples. There's an 84-page manual and a 10-page tutorial – which is absolutely essential.

Two examples have been chosen to illustrate the flexibility of the system: An island-based Tornado scenario and a World War I landscape with you flying a Sopwith Camel against some Fokkers – Tally ho Ginger.

Active objects

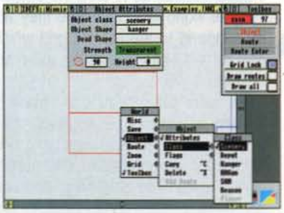
With a fixed simulation such as this there's a limit to the types of object you can create that are active. For example, you can have depots which produce trucks that follow a fixed route to supply hangars, anti-aircraft guns, surface-to-air missile launchers and other depots.

But within this framework your imagination can roam free. For a start you can control the shape of any object in the simulation including the active ones. In the Tornado example, the depots are harbours and the trucks are boats.

And there's no reason why two depots can't sit in the same location giving the effect of two routes coming from one place. Alternatively a route can go through a mountain and you just add tunnel entrances and exits.

A basic !Flight application is provided containing all the necessary run files and so on although the shapes directory holds just a runway and plane. Each of the applications gives you control over a particular feature of the simulation so let's take each in turn and see what you can do with it.

Before you can really do anything you need to construct the shapes for the objects in the simulation. Using the examples you can experiment with the facilities available – this is especially useful as the shape editor is difficult to get to grips with. Creating a new object involves defining a set of points and creating polygons that link them. You can then colour the polygons from the standard 256 available shades. The trick with the editor is that you view the scene along one of the axes and use the up and down cursor keys to adjust the depth at which you're viewing.


Object Attributes
Toolbox
Object
Route
Route Enter
Grid Lock
Draw routes
Draw all
World
Misc
Save
Object
Route
Zoom
Grid
Toolbox
Object
Attributes
Class
Flags
Copy
Delete
Scenery
Depot
Hangar

Object class scenery
Object Shape hangar
Dead Shape
Strength Transparent

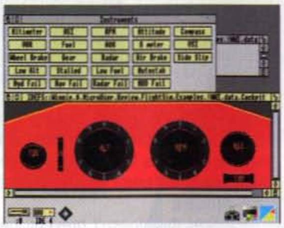
Defining an object in the world

This takes some getting used to but is fairly logical. There is an indicator to show what depth you're at on the current axis. In addition you can have your object displayed in 3D along each axis and at an angle.

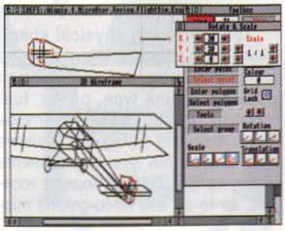
At any stage you can view your object and see it how it will appear in the game, and you may find that a polygon is only visible from one side – usually the wrong side. This is because the points must defined in a clockwise manner to be displayed correctly, but luckily there's a flip option if you happen to get it wrong.

You have to define the object three

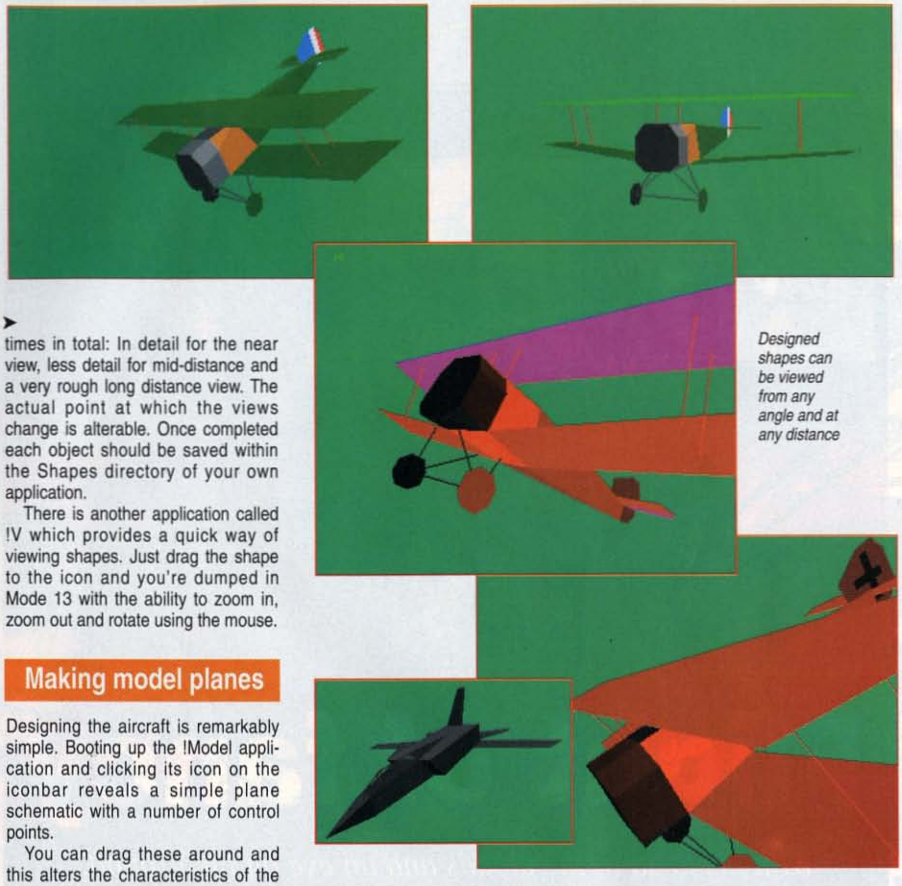
➤


Instruments
Altimeter
ASI
RPM
Attitude
Compass
Fuel
Wheel Brake
Gear
Radar
Air Brake
Side Slip
Low Alt
Stalled
Low Fuel
Hyd Fail
Nav Fail
Radar Fail

Editing the Camel's cockpit


Toolbox
Rotate & Scale
Wireframe
Scale
Colour
Tools
Grid Lock
Rotation
Translation

Using the wireframe views



Designed shapes can be viewed from any angle and at any distance

times in total: In detail for the near view, less detail for mid-distance and a very rough long distance view. The actual point at which the views change is alterable. Once completed each object should be saved within the Shapes directory of your own application.

There is another application called !V which provides a quick way of viewing shapes. Just drag the shape to the icon and you're dumped in Mode 13 with the ability to zoom in, zoom out and rotate using the mouse.

Making model planes

Designing the aircraft is remarkably simple. Booting up the !Model application and clicking its icon on the iconbar reveals a simple plane schematic with a number of control points.

You can drag these around and this alters the characteristics of the plane. For example you can increase the wing area to increase overall lift, at the expense of manoeuvrability. Or you can bend the wings up by a variable amount to adjust stability.

The overall length and size of the tailplane is also adjustable, as is the length of the fuselage. I would have liked to have produced a canard shape – with the smaller wings at the front – or a complete delta wing, but the aerodynamics for such things are completely different so the model can't handle it.

However this doesn't prevent the shape of the plane being defined as something unusual because this and the model defining its parameters are not related.

Apart from the physical shape there's a dialogue box to define the angle of the wing, stall angle, amount of drag, engine type, power, fuel capacity, weight and undercarriage type. A second dialogue box allows you to enter the type of armaments being carried: Cannon rounds, rockets, air-to-air and air-to-ground missiles.

If you load the model for the Sopwith Camel you can add rockets and air-to-air missiles as well as reduce its drag and so forth. Unfortunately the way WWI is set up the enemy aircraft use the same specifications as yours, so whatever improvements you give yourself they get it too.

Into the cockpit

If you're customising a flight simulator the cockpit that's displayed on screen requires some attention. It's no good having a World War I plane with a Tornado display panel. So the !Cockpit application allows you to define your own.

The first step really requires a Mode 13 painting program so an overall design needs to be made up with *holes* to accept all the different instruments your plane will be supplied with.

The number of instruments available is staggering. Some would appear fairly unnecessary – a HUD failure is pretty obvious so an indicator is probably not vital but it adds to the display. Placing the instruments is just a matter of dragging them to the appropriate location.

The HUD – head-up display – is not switched on initially but a simple selection on the menu brings it up. Using a further menu you select up to nine instruments to appear on the cockpit windshield. Of course it's just as easy to modify the Sopwith Camel so it has a HUD, which then gives you a big advantage over the enemy planes.

Finally you need to bring the whole thing together using the !World application. This is very simple to use indeed. All you do is drag the objects into the world window where they will be snapped to the current grid which can be set up from 100km intervals down to 0.125m.

Once in place you can rotate it through any number of degrees, raise it off surface level – yes, you can have floating mountains – and modify its attributes. The amount of damage an object can take before it's destroyed can be set as well as the shape to display when it's been destroyed.

But the main attribute of an object is whether it's classed as scenery, depot, hangar, AA gun, SAM, beacon or player. Any shape can be made to perform any of these functions apart from player which is automatically created and there can only be one of them. So you can have mountains as depots, trees as planes, beacons floating in the sky and so on.

The characteristics of the enemy planes are controlled under the hangar specification. So you can use a separate flying model and shape for each hangar and give yourself superior armament and instrumentation – it may not be fair but it makes winning a lot easier.

Getting busy

You can create routes for the trucks from any depot to any other location that might need supplies. You control the interval at which they are despatched and the number in each group. With careful arrangement you could create quite a busy set of buildings. Guns can be mounted on the top of buildings or on mountainsides using the object height option, but supplying them could cause problems.

Some general parameters are available: Sky and ground colour plus the colour of the flecks that appear as a regular grid on the ground to help show speed when flying close to the ground on otherwise featureless terrain. Overall wind direction and speed can be set too.

Summing up

The Flight Sim Toolkit is not something to be taken up lightly – the shape editor requires considerable work to produce decent results. But you can always save partway through and come back to it later. And the examples let you experiment with individual aspects without having to learn it all at once which is great for the education market.

On an ARM2 machine there is a reduction in speed during near-collisions between planes but it's not drastic and on the whole simulations run well. With an ARM3 there are no perceptible slow-downs.

This is a unique program which has hours of enjoyment built into it whether you just want to construct simulations for others to play or just have some fun. Excellent.

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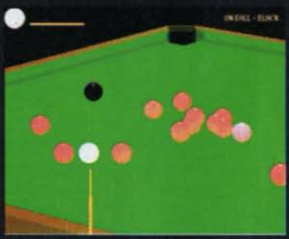
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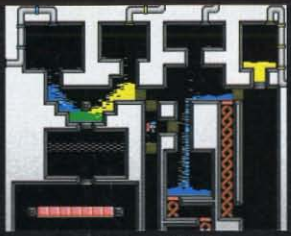
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Arachnophobia

Steve Turnbull presents a great type-in game for all Acorn machines

DOWN in the cellar there are spiders – lots of them, and they're not stupid. Over the years they've been digging great caverns and developing machines to clone themselves. Now you must clear them out.

Armed with your trusty laser blaster you must enter their lair and dispose of the power generators they are using to increase their strength.

You can use the energy points lying around and the blaster enhancer units, but so can the spiders. In fact they can do everything you can, except they don't have guns.

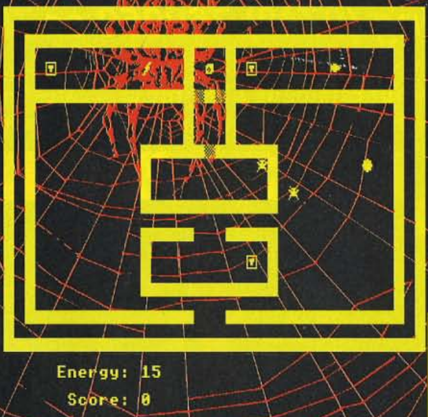
So remember, when you've just used the teleport to escape – they can use it too. Complacency could be fatal.

Use the standard game keys Z X / : on the 8-bit machines and Z X . : on the 32-bit. In both use Return to fire.

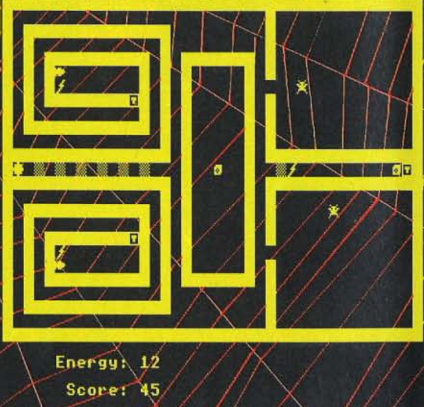
Type in the program and use the checksums to ensure you've made no typing errors. The listing contains four levels but next month we'll be featuring the designer so you can create your own tortuous screens.

If you are using an Electron, BBC Micro or Master you will find that the program response is sluggish. In a future issue we'll be describing the various programming techniques that have been used, and along with this will be special machine code versions to speed the whole thing up.

- *Until then, happy zapping.*



Energy: 15
Score: 0



Energy: 12
Score: 45

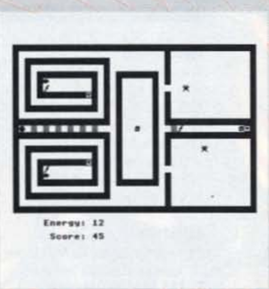
```
   10 REM Arachnoid
   20 REM by Steve Turnbull
   30 REM (c) The Micro User
   40 MODE4:PROCi:ONERRORPROCer
   50 REPEATPROCht(KT%):REPEATPROCig:REP
EATIFTIME>!FNj(I%)PROCdo(I%)
   60 I%=(I%+1)MODN%:UNTIL(G%=0)OR(me%!E
%<=0):PROCw(100)
   70 UNTILG%>0:PROCrd:UNTILFALSE
   80 DEFPROCi:VDU23,1,0;0;0;0;:Z%=RND(-
TIME):*FX4,1
   90 hs%=10:DIMhs%(hs%),hs$(hs%):KT%=TR
UE
  100 FORH%=1TOhs%:hs%(H%)=H%*10:hs$(H%)
="The Micro User":NEXT
  110 lx%=0:wx%=39:ty%=0:hy%=24:my%=31:X
%=lx%+1:Y%=ty%+1:oX%=-1:oY%=-1:ww%=wx%
  120 hw%=my%:op%=1:oe%=2:ow%=3:ot%=4:og
%=5:om%=6:of%=7:ob%=8:or%=9:B%=128
  130 VDU&8017;-1;-1;-1;-1;&8117;&7E18;&
FF7E;&7EFF;&187E;
  140 VDU&8217;&0603;&1E0C;&180C;&6030;&
8317;&B800;&FFFE;&B8FE;0;
  150 VDU&8417;&81FF;&BDBD;&9999;&FF81;&
8517;&3E00;&6E7E;&6E56;&7C;
  160 VDU&8617;&3C42;&7EDB;&7E3C;&8142;&
8717;&320C;&566C;&5C3A;&3068;
  170 VDU&8817;&55AA;&55AA;&55AA;&55AA;&
8917;0;&1800;&18;0;
  180 mo%=30:T%=0:X%=4:Y%=8:E%=16:J%=20:
D%=24:S%=28:H%=ASC".":DIMO%mo%*(S%+4)
  190 nx%=126-H%:mu%=-88:md%=-104:ml%=-9
8:mr%=-67:IFPAGE<&8000md%=-105:mu%=-73
  200 fr%=-74:nL%=1:ENDPROC
  210 DEFPROCer:IFERR=17IFNOTINKEY-1KT%=
TRUE:ENDPROC
  220 ONERROROFF:VDU23,1,1;0;0;0;26,12:*
FX15
  230 REPORT:PRINT" at ";ERL:END
  240 DEFPROCcls(X%,Y%,U%,V%,C%)VDU28X%Y
%+V%X%+U%Y%:ww%=U%:hw%=V%
  250 IFC%>-1VDU17C%+128,17,1-C%,12:ELSE
VDU26,17,128,17,1:ww%=wx%:hw%=my%
  260 ENDPROC
  270 DEFPROCht(T%)REPEATIFT%PROCin:ELSE
PROChs
  280 PROCcn("Press SPACE to play",30)
  290 T%=NOTT%:K%=FNkp(" ",500):UNTILK%:
L%=0:sc%=0:cs%=5:fs%=10:ff%=0:ENDPROC
  300 DEFFNkp(k$,T%)LOCALK%:T%=T%+TIME:R
EPEATK%=INSTR(CHR$255+k$,INKEY$0)-1:UNTI
LK%ORTIME>T%:=K%
  310 DEFPROCin:PROCh("Instructions",0):
PROCcn("Destroy all generators on each l
evel",5)
  320 PROCci(128,"Wall"):PROCci(129,"You
"):PROCci(130,"Energy")
  330 PROCci(131,"Weapon"):PROCci(132,"T
eleport"):PROCci(133,"Generator")
  340 PROCci(134,"Monster"):PROCci(135,"
Fungus"):PROCci(136,"Barrier"):ENDPROC
  350 DEFPROCci(C%,s$)PROCcn(CHR$C%+STRI
NG$(20-LENs$,".")+s$,9+(C%-128)):ENDPROC
  360 DEFPROChs:LOCALQ%,R%:PROCh("High s
cores",0):FORQ%=1TOhs%:R%=20-LENhs$(Q%)
  370 PRINTTAB(5,7+hs%-Q%)hs$(Q%)STRING$
(R%,".")FNn(hs%(Q%)):NEXT:ENDPROC
  380 DEFFNn(N%)=RIGHT$("......."+STR$N%
,8)
  390 DEFPROCh(k$,Y%)VDU26:CLS:PROCcn(k$
,Y%):ENDPROC
  400 DEFPROCig:VDU26,12:I%=0:L%=L%+1:IF
(L%-1)MODnL%=0RESTORE:READnL%
  410 PROCh("Level "+STR$L%,13):PROCw(50
):PROCcn("Get Ready...",16):PROCw(200)
  420 PROCdl(L%):PRINTTAB(5,26)"Energy:"
```

```
TAB(6,28)"Score:";:ENDPROC
  430 DEFPROCw(T%)T%=T%+TIME:REPEATUNTIL
TIME>T%:ENDPROC
  440 DEFPROCdl(L%):PROCcls(lx%,ty%,wx%,
hy%,1)
  450 PROCcls(lx%+1,ty%+1,wx%-2,hy%-2,0)
:PROCds(L%):ENDPROC
  460 DEFPROCds(L%)LOCALF%,Q%,o$:VDU26:R
EADF%,o$:K%=B%:FORQ%=1TOF%-1:PROCdd:NEXT
:PROCdob(o$):ENDPROC
  470 DEFPROCdd:LOCALP%,s$:READs$:FORP%=
1TOLENs$
  480 PRINTSTRING$(ASCMID$(s$,P%)-H%,CHR
$K%);:K%=ABS(K%-B%-32):NEXT:ENDPROC
  490 DEFPROCdob(s$)LOCALP%:N%=0:G%=0:RE
PEATPROCno(FNv,FNv,FNv,FNv,TIME,FNv,FNv)
:UNTILP%>=LENs$:ENDPROC
  500 DEFFNv:P%=P%+1:LOCALc$:c$=MID$(s$,
P%,1):IFc$<>"!"=ASCc$-H%
  510 P%=P%+2:=nx%*(ASCMID$(s$,P%-1)-H%)
+ASCMID$(s$,P%)-H%
  520 DEFPROCno(t%,x%,y%,e%,j%,d%,s%)IFN
%=mo%ENDPROC:ELSEIFt%=og%G%=G%+1ELSEIFt%
=op%me%=FNao(N%)
  530 PROCso(N%):PROCpo(N%):N%=N%+1:ENDP
ROC
  540 DEFPROCko(I%)PROCgo(N%-1):PROCso(I
%):N%=N%-1:ENDPROC
  550 DEFPROCgo(N%)LOCALZ%:Z%=FNao(N%):t
%=Z%!T%:x%=Z%!X%:y%=Z%!Y%:e%=Z%!E%:j%=Z%
!J%:d%=Z%!D%:s%=Z%!S%:ENDPROC
  560 DEFPROCso(N%)LOCALZ%:Z%=FNao(N%):Z
%!T%=t%:Z%!X%=x%:Z%!Y%=y%:Z%!E%=e%:Z%!J%
=j%:Z%!D%=d%:Z%!S%=s%:ENDPROC
  570 DEFPROCpo(N%)LOCALZ%:Z%=FNao(N%):V
DU31Z%!X%Z%!Y%Z%!T%+B%:ENDPROC
  580 DEFFNao(N%)=O%+N%*(S%+4)
  590 DEFFNj(N%)=J%+FNao(N%)
  600 DEFPROCdo(I%)PROCgo(I%):PROCe:IFt%
=0ENDPROC:ELSEj%=TIME+ABSs%*cs%
  610 IFt%=op%PROCop(INKEYml%-INKEYmr%,I
NKEYmu%-INKEYmd%,INKEYfr%)ELSEIFt%=og%PR
OCog:ELSEIFt%=om%PROCom(SGN(U%-x%),SGN(V
%-y%)):ELSEIFt%=of%PROCof:ELSEIFt%=or%PR
OCor
  620 PROCso(I%):ENDPROC
  630 DEFPROCe:IFe%>0ENDPROC
  640 VDU31x%y%32:IFt%=om%PROCnf(x%,y%,5
,30)ELSEIFt%=og%G%=G%-1
  650 t%=0:PROCko(I%):ENDPROC
  660 DEFPROCop(u%,v%,F%)PROCdt:IFff%ff%
=ff%-1ELSE*FX21
  670 IFF%PROCf:ELSEPROChop
  680 U%=x%:V%=y%:ENDPROC
  690 DEFPROCdt:PRINTTAB(13,26);e%SPC2TA
B(13,28);sc%;:ENDPROC
  700 DEFPROCf:IFu%=0IFv%=0ENDPROC:ELSEI
Fff%ENDPROC
  710 LOCALC%:C%=FNc(x%+u%,y%+v%):IFC%=3
2PROCno(or%,x%+u%,y%+v%,e%,TIME,(u%*&100
00)+(v%AND&FFFF),1)ELSEPROChor(C%,x%+u%,
y%+v%)
  720 ff%=fs%:e%=e%-1:ENDPROC
  730 DEFPROChop:IFu%=0IFv%=0ENDPROC:ELS
ELOCALC%,Z%:u%=x%+u%:v%=y%+v%
  740 C%=FNc(u%,v%):IFC%=32VDU31x%y%32,3
1u%v%t%+B%:x%=u%:y%=v%:ENDPROC
  750 C%=C%-B%:IFC%=0ENDPROC:ELSEZ%=FNao
(FNf(C%,u%,v%))
  760 IFC%=ot%PROCtp(Z%,u%,v%):ENDPROC
  770 IFC%=oe%PROCze(-Z%!E%):PROCzk(Z%):
ENDPROC
  780 IFC%=of%PROCze(Z%!E%):PROCde(Z%,1)
:ENDPROC
  790 IFC%=ow%PROCwp:ENDPROC:ELSEIFC%=ob
%PROCde(Z%,1):PROCze(2):ENDPROC
  800 IFC%<>t%IFC%=om%ORC%=op%PROCde(Z%,
2):PROCze(1)
  810 ENDPROC
  820 DEFFNf(C%,x%,y%)LOCALL%,K%:K%=-1
  830 FORL%=0TON%-1:Z%=FNao(L%):IFZ%!T%=
C%IFZ%!X%=x%IFZ%!Y%=y%K%=L%:L%=N%
  840 NEXT:=K%
  850 DEFPROCde(I%,V%)V%=I%!E%-V%:IFV%<0
V%=0
  860 I%!E%=V%:IFI%!T%=om%I%!J%=I%!J%+I%
!S%ELSEI%!J%=TIME
  870 ENDPROC
  880 DEFPROCze(Z%)e%=e%-Z%:ENDPROC
  890 DEFPROCzk(Z%)Z%!E%=0:Z%!J%=TIME:EN
DPROC
  900 DEFPROCwp:PROCzk(Z%):IFt%=op%IFfs%
>2fs%=fs%-1:ELSEIFt%=om%IFs%>1s%=s%-1
  910 ENDPROC
  920 DEFPROCtp(Z%,P%,Q%)LOCALu%,v%:u%=Z
%!D%DIV64:v%=Z%!D%MOD64
  930 VDU31x%y%32,31u%v%t%+B%:x%=u%:y%=v
%:Z%!E%=Z%!E%-1:ENDPROC
  940 DEFPROCog:IFd%IFRND(300)=1IFFNr(x%
,y%)=32PROCnm(x%+u%,y%+v%,e%/2,s%+RND(3)
):d%=d%-1:IFd%<1d%=0
  950 ENDPROC
  960 DEFPROCnm(x%,y%,e%,s%)PROCno(om%,x
%,y%,e%,TIME+s%*2,0,s%):ENDPROC
  970 DEFPROCom(u%,v%)IFABSu%EORABSv%ELS
EIFRND(2)=1u%=0ELSEv%=0
  980 PROChop:ENDPROC
```

TAKE IT EASY

If you would like to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*

```
  990 DEFPROCof:IFRND(50)=1IFFNr(x%,y%)=
32PROCnf(x%+u%,y%+v%,e%-1,s%+RND(3)-1)
 1000 ENDPROC
 1010 DEFFNr(x%,y%)LOCALK%:u%=0:v%=0:K%=
RND(4):IFK%=1u%=1:v%=0ELSEIFK%=2u%=-1:v%
=0ELSEIFK%=3u%=0:v%=1ELSEIFK%=4u%=0:v%=-
1
 1020 =FNc(x%+u%,y%+v%)
 1030 DEFPROCnf(x%,y%,e%,s%)PROCno(of%,x
%,y%,e%,TIME+s%*2,0,s%):ENDPROC
 1040 DEFPROCor:LOCALu%,v%:v%=d%AND&FFFF
:u%=d%DIV&10000:IFv%>1v%=-1
 1050 C%=FNc(x%+u%,y%+v%):VDU31x%y%32:IF
C%=32u%=x%+u%:v%=y%+v%:VDU31u%v%t%+B%:x%
=u%:y%=v%ELSEPROChor(C%,x%+u%,y%+v%):t%=
0
 1060 ENDPROC
 1070 DEFPROChor(C%,x%,y%)C%=C%-B%:IFC%=
0ENDPROC
 1080 LOCALK%:K%=FNf(C%,x%,y%):IFK%>-1PR
OCde(FNao(K%),e%):sc%=sc%+5
 1090 ENDPROC
 1100 DEFFNc(X%,Y%)LOCALA%:A%=135:VDU31X
%Y%:=(USR(&FFF4)AND&FF00)DIV256
 1110 DEFPROCm(k$)PROCcls(lx%,my%,wx%,0,
0):PROCcn(k$,0):ENDPROC
 1120 DEFPROCcn(k$,Y%)PRINTTAB((wx%-LENk
$)/2,Y%)k$;:ENDPROC
 1130 DEFFNm(t$,m$)LOCALo$,M%,X%:m$=m$+d
$:PROCt(t$):X%=(wx%-LENt$)/2:REPEAT
 1140 o$=o$+CHR$ASCm$:P%=INSTR(m$,d$):PR
INTTAB(X%,M%)LEFT$(m$,P%-1);
 1150 m$=MID$(m$,P%+1):M%=M%+1:UNTILm$="
":=o$
 1160 DEFPROCt(t$)PROCm(""):PROCcls(lx%,
my%-6,wx%/3,0,0):PROCcn(t$,0):PROCcls(lx
%,my%-5,wx%/3,5,1):ENDPROC
```



```
 1170 DEFPROCrd:sc%=sc%+me%!E%:VDU26,12:
PROCcn("Game Over",7):PROCw(200):*FX15
 1180 KT%=FALSE:IFsc%<hs%(1)PROCw(200):E
NDPROC:ELSELOCALA%,B%
 1190 CLS:PROCcn("Well done!",8):PROCcn(
"You've made a new high score",10)
 1200 PROCcn("Enter your name",12):INPUT
TAB(15,14)".........."TAB(15,14)n$
 1210 A%=2:REPEATB%=A%-1:IFsc%>hs%(A%)hs
%(B%)=hs%(A%):hs$(B%)=hs$(A%)
 1220 A%=A%+1:UNTILsc%<hs%(A%)ORA%=hs%:h
s%(A%)=sc%:hs$(A%)=LEFT$(n$,10):ENDPROC
 1230 DATA4
 1240 DATA2
 1250 DATA4A@8.36A8V.B6B4V.B6@4V.B3A2`0B
1M28.80;2B.B2E@8!J282E28!:282228!@Z8/AD=
.04=:8.5
 1260 DATAWT0/R/0//</1/=//0//</1/=//0//<
/1/=//0/>///?/0//</1/=//0//</1/=//0//</1
/=//0//84/49//0//8/9/9//0//8/9/9//0//8/9
/9//0//8;9//0//P//0//83139//0//8/9/9//0/
/8/9/9//0//8/9/9//0//8;9//0//P//0/>1?/0T
W
 1270 DATA3
 1280 DATA3S:`0/4048.540@8.5//::.061:8.>
63:8.?65:8.@67:8.A69:8.B0I:`.B3B:`.V2T:8
!>480348.B1338.813A8.803@8.B2:?0!>082:50
!>D86;:8.B6H:3.B
 1290 DATAWF/;0/<7/;0//:/7/;0///8///5//;
0////6/////3///;0////6/////3/=0///6/////
/3///;0//8/////3///;0/:////3///;0<///3//
/;?//3//>>/3/=?//3//><///3///;0/:////3//
/;0//8/////3///;0///6//////3///;0////6//
///3/=0////
 1300 DATA6/////3///;0///8///5//;0//:/7/
;0/<7/;0F/;W
 1310 DATA3
 1320 DATA/A:5./4;48.34;@8.34G@8.34G48.3
6A3/.B6AA/.B6H:/.B6::/.B67:/.B6K:/.B3N:/
BV34:/BV
 1330 DATAWT0T0T0T095/5:09/;/:09/151/:00
50/;/05100/3/0////1/1////0/3/100/3/0////
/3/////0/3/100/3/0/////3/////0/3/100/8/7
/8/100/3/0/////3/////0/3/100/3/0/////3//
///0/3/100/3/0////1/1////0/3/10050/;/051
09/151/:09/
 1340 DATA;/:095/5:0T0T0T0TW
 1350 DATA2
 1360 DATA//9/./6L9V.B6K9V.B6J9V.B6I9V.B
6H9V.B1C38.81B38.805?`.B06?`.B6G9V.B6F9V
.B3S7`B/3S;`B/
 1370 DATAWT0/E<0//C/<0///A//<0/////?///<
0/////?//<0////A/84///C8/10//N/10/P10T0/
P10//N/10///C8/10////A/84/////?//<0/////
/=///<0/////=////<0/////?///<0///A//<0//C
/<0/E<0TW
```

BBC/ELECTRON

If you are entering this program on an 8 bit BBC Micro or Electron use £ where you see `.

Get it right

```
  10 =    0 0  |  290 = AFE1 C  |  570 =  691 8  |  850 = BAF5 4  | 1130 = 8FF7 5
  20 =    0 0  |  300 = 7EAE C  |  580 = 1817 2  |  860 = D606 1  | 1140 = AF76 0
  30 =    0 0  |  310 = B5EA F  |  590 = B42B 1  |  870 = ED0F 6  | 1150 = 1680 E
  40 = E7D7 7  |  320 = ACAF 9  |  600 = DBA3 D  |  880 =  E46 4  | 1160 = BA1F 9
  50 = AC0C 7  |  330 = 7184 A  |  610 = 64ED 6  |  890 = E689 9  | 1170 = BA95 B
  60 = A41C 0  |  340 = F240 8  |  620 = 86D7 9  |  900 = 4B9B B  | 1180 = 2201 0
  70 = F4CD 1  |  350 = C527 4  |  630 = F38F 0  |  910 = ED0F E  | 1190 = D818 4
  80 = AF23 6  |  360 = 1207 D  |  640 = E38E 9  |  920 = 8B82 8  | 1200 = 812B D
  90 = D9EB 1  |  370 = 37AA C  |  650 = CFD9 2  |  930 = 3607 5  | 1210 = 81AD 2
 100 = DB74 9  |  380 = C659 A  |  660 = 5C2C 1  |  940 = EACF 2  | 1220 = 6A2B 7
 110 = 2203 5  |  390 = 259D 5  |  670 =  DF4 A  |  950 = ED0F 6  | 1230 = 269D 4
 120 = F055 3  |  400 = B3E4 E  |  680 = E17C 7  |  960 = 6165 8  | 1240 = 465B 8
 130 = B3F1 3  |  410 = 3B41 6  |  690 = C4E9 9  |  970 = DFF9 2  | 1250 = 7461 9
 140 = E8EA 1  |  420 = 7364 0  |  700 = ED3A E  |  980 = 5368 F  | 1260 = 8949 1
 150 = 795C 7  |  430 = 544E 1  |  710 = 6D9C 0  |  990 = 4740 A  | 1270 = 567A 0
 160 = 126B B  |  440 = 364B 2  |  720 = 129C 2  | 1000 = ED0F A  | 1280 = 7C0E 8
 170 = DFB6 7  |  450 = 9C88 8  |  730 = 8D4C F  | 1010 = FD92 7  | 1290 = F9ED 4
 180 =  107 8  |  460 = A372 B  |  740 = AB33 D  | 1020 = 97BD 3  | 1300 = 4E8B 2
 190 = C58E 0  |  470 = 9E28 7  |  750 = EE84 C  | 1030 = 1BD0 1  | 1310 = 567A 9
 200 = 6293 8  |  480 = 49D3 7  |  760 = 6CA9 7  | 1040 = F77E 9  | 1320 = 285D 1
 210 = 4A6F 5  |  490 = DDCA 1  |  770 = D50A 8  | 1050 = 3D42 8  | 1330 = AD39 A
 220 = A0DA C  |  500 = BED9 1  |  780 = B83C F  | 1060 = ED0F 7  | 1340 = 6007 7
 230 =  532 A  |  510 = 4CDF A  |  790 = 70AF 5  | 1070 = E26D F  | 1350 = 465B 7
 240 = A4CE 5  |  520 =   1B 2  |  800 = 92DF 6  | 1080 = 956C 9  | 1360 = 2A6D 7
 250 = 2D01 F  |  530 = 370B 1  |  810 = ED0F F  | 1090 = ED0F 8  | 1370 = C2F2 F
 260 = ED0F E  |  540 = DA66 D  |  820 = 670C 0  | 1100 = 833D 6  |
 270 = C3F9 6  |  550 = DC11 7  |  830 = 13B2 5  | 1110 = 94E8 0  |
 280 = F19E 6  |  560 = 52E8 A  |  840 = 7C31 1  | 1120 = E93B 3  |
```

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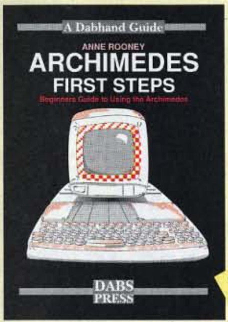

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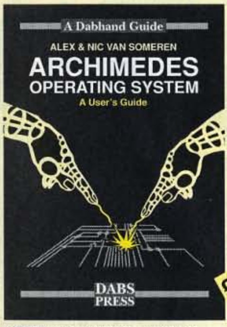

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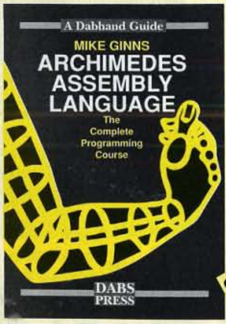

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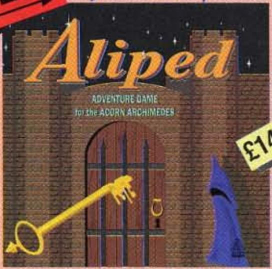

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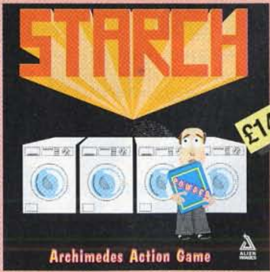

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Bruce Goatly holds a master class on pages and frames

Little brother is watching you

IN IMPRESSION Junior every new page starts as essentially a copy of the frames on the one before. Figure I shows an Impression Junior page containing three local frames, two of which – labelled 1 and 3 – are linked, and have been overfilled with text.

This has forced the creation of a new page containing three frames, but frame 2 on page 1 isn't automatically linked to its copy on page 2, as the downward red arrow indicates.

Try this and experiment with manually linking frame 2 and its copy – you can only link empty frames, by the way – until you've sorted out what's going on. This is simple and fairly intuitive, but for more advanced work you will need something more powerful. Impression, like the other Archimedes DTP software, uses a system of master pages.

Doctoring the master

The benefit of master pages is consistency, as documents in a series can be based on the same framework. But they are flexible, as changes to a document's master page affects all the pages based on it, in Impression anyway. Of course you aren't limited to using the frames on the master page in the pages of your document: You can add extra ones wherever you want to vary the layout locally.

To gain access to Impression's master pages choose Edit=>View master pages from the main menu or press Control+F2. A new window appears on screen, containing some ready-made page layouts which you can alter by adding, removing or resizing frames, or even adding graphics or text if you want to include them on every page.

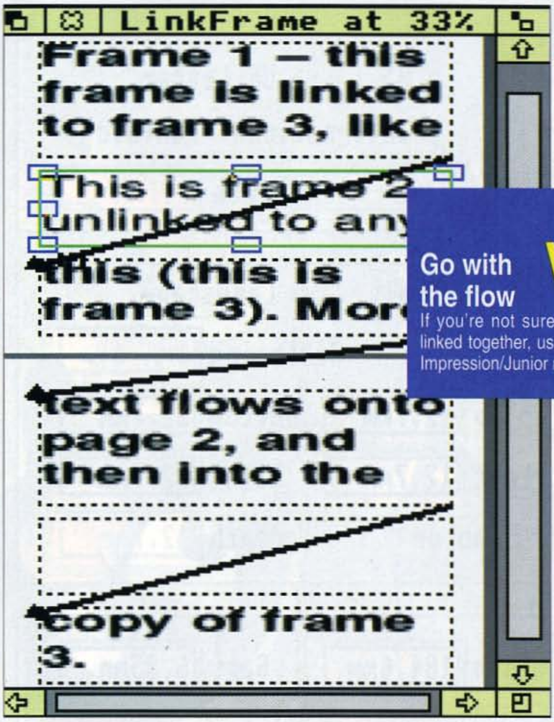
You can also add or delete master pages as you wish, though you can't delete a master page used in the document. Figure II shows some of the standard master frames in Impression, and Figure III shows the complicated dialogue box used to make a new master page, which you can only reach via the Edit submenu called up from a master page.

New designs

To change the master page used in the document – or, strictly, the chapter – choose Alter chapter from the Edit submenu to bring up the Alter chapter dialogue box and type a different number in the writable icon labelled Master page number.

If the master page you choose has different designs for left and right pages – this is useful for

➤



Frame 1 – this frame is linked to frame 3, like

This is frame 2 unlinked to any

this (this is frame 3). More

text flows onto page 2, and then into the

copy of frame 3.

Figure I: Text flowing between linked frames – the arrows show the text flow

KEY TIP

Go with the flow

If you're not sure how some text frames are linked together, use the Show flow option in the Impression/Junior main menu.

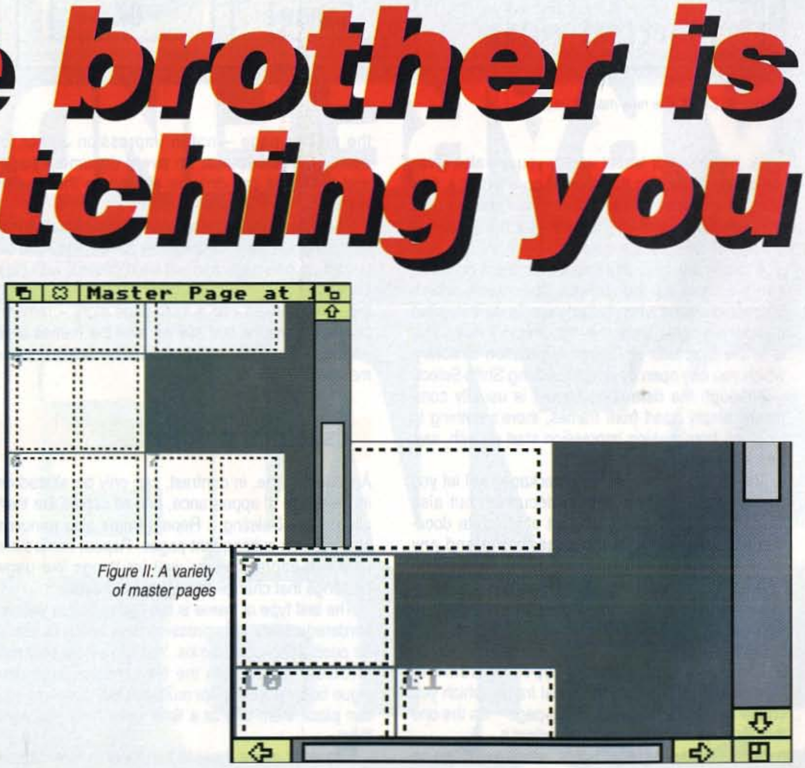
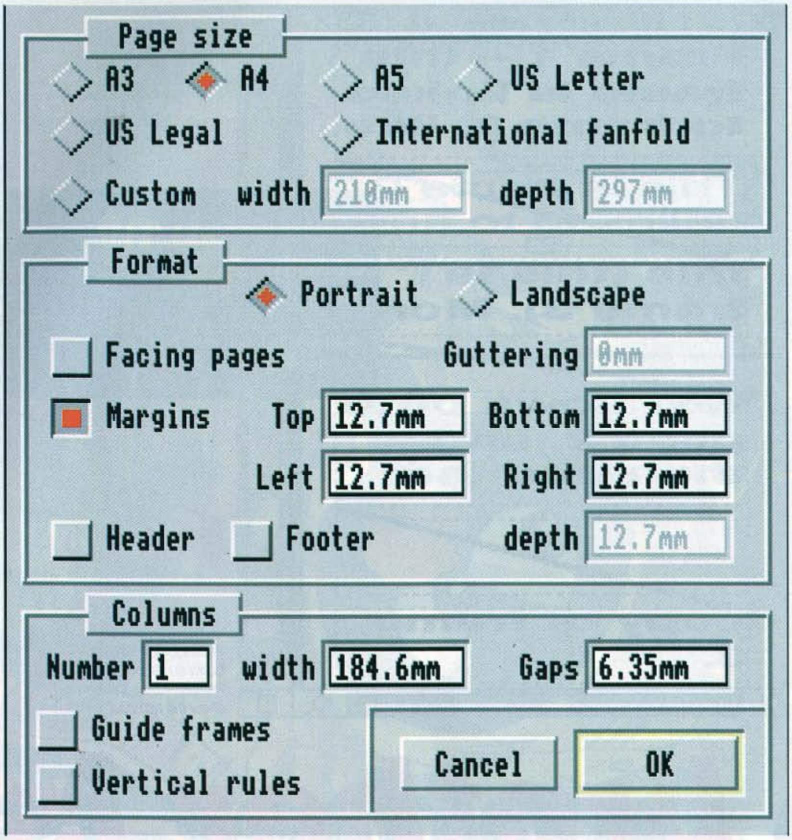


Figure II: A variety of master pages



Page size
○ A3 ● A4 ○ A5 ○ US Letter
○ US Legal ○ International fanfold
○ Custom width 210mm depth 297mm

Format
● Portrait ○ Landscape
☐ Facing pages Guttering 0mm
☒ Margins Top 12.7mm Bottom 12.7mm
Left 12.7mm Right 12.7mm
☐ Header ☐ Footer depth 12.7mm

Columns
Number 1 width 184.6mm Gaps 6.35mm
☐ Guide frames
☐ Vertical rules

Figure III: Creating a new master page

book, magazine or leaflet work – you are also given the option of starting the chapter on a left or a right page. Some books always start a new chapter on a right-hand page even if that means a blank page at the end of the previous chapter.

A document, plus any master frames it contains, can be used as the default document, which Impression loads when it starts up. To do this, save it under the name Default in the directory Auto. This is in the !Impress or !Junior application directory, which you can open by double-clicking Shift+Select.

Although the default document is usually completely empty apart from frames, there's nothing to stop you from making Impression start up with, say, headed notepaper.

The other Archimedes DTP packages will let you not only customise a default document but also save stylesheets, which are sort of template documents containing only the page format and any master pages and text styles that have been defined. Double-clicking on a stylesheet creates a blank document based on this information. In Impression you can only save documents, not stylesheets.

There are four different types of frame in Impression. First there's the Local frame, which you create as needed on a document page – it's the one that displays handles when you select it.

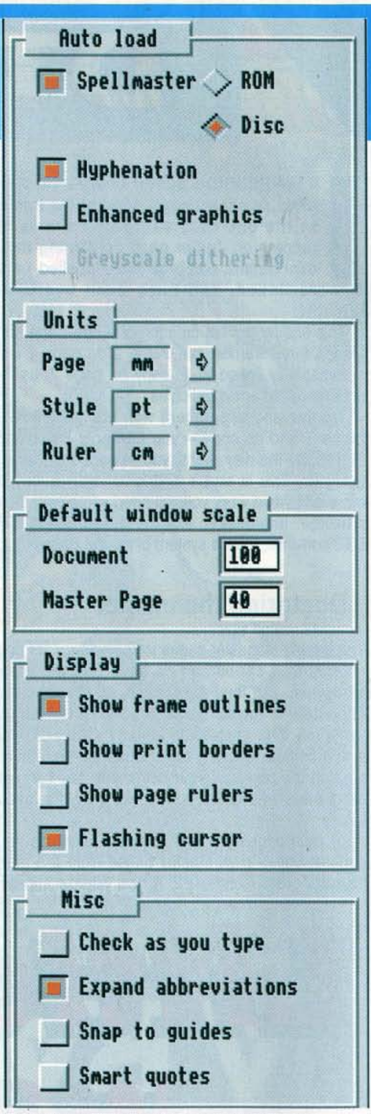
Next there are Master frames, which are those on the master page – not in Impression Junior, of course. These appear on every document page, and their size can only be altered on the master page.

Then there are also Repeat frames – which serve as master frames in Impression Junior. They can be placed on one page and will be repeated, with their contents, on every page afterwards even though they aren't linked into a multi-page story – remember that it was the text spilling over the frames on a page that caused a new page to be created automatically.

Essential guides

A Repeat frame, in contrast, can only be altered on its first page of appearance, and all copies are then altered too. Deleting a Repeat frame also removes all copies on subsequent pages. Repeat frames are useful in Impression as well for things like page headings that change throughout a chapter.

The last type of frame is the Guide one, a yellow-bordered variety in Impression only, which is useful for positioning local frames. You can set up columns of Guide frames from the New master page dialogue box – essential for multi-column work – or you can place them one at a time just where you want them.



Auto load
☒ Spellmaster ○ ROM
● Disc
☒ Hyphenation
☐ Enhanced graphics
☐ Greyscale dithering

Units
Page mm
Style pt
Ruler cm

Default window scale
Document 100
Master Page 40

Display
☒ Show frame outlines
☐ Show print borders
☐ Show page rulers
☒ Flashing cursor

Misc
☐ Check as you type
☒ Expand abbreviations
☐ Snap to guides
☐ Smart quotes

Figure IV: Making Impression do things your way

The point about them is that local frames can be made to *snap* to them, making accurate positioning easy.

To group frames temporarily so they will behave as a single unit, just select one of them and hold down Shift while you select the others – their outlines will turn green.

However, only the first will have handles which you use to adjust the sizes. To group them permanently choose Group frames from the Frame submenu. You can always ungroup them later if you need to.

Editing frames is as easy as editing text: A selected frame can be cut or copied to the clipboard and then pasted back again. It's important to remember that when no text passage is marked the selected frame will be cut or copied.

Everyone has a different way of working and Impression allows you to customise its operation to your own. Click Menu on the Impression icon on the icon bar and choose the Preferences dialogue box. The wide range of choices is shown in Figure IV and we'll see some of them in action later.

● *Next month we'll look at fonts and their families –*

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Manipulatin

ONE of the many areas that computers are very good at is in being able to carry out repetitive tasks. Those of us who have done clerical duties will understand the joy at finding applications such as 1st Word Plus which can automatically create lots of copies of individually addressed letters.

Most spreadsheet packages have also gone a long way to easy manipulation of cells. Once again my explanation and examples will be from Schema, but other spreadsheet packages such as PipeDream have similar features although the method of use may be slightly different.

Copying

Suppose you want to make a copy of a block of data leaving the original block intact. A special type of copying needs to take place when you are copying formulae. This involves the cells referenced within a formula being altered so that the formula automatically refers to a new set of data cells. For example, say you have a small spreadsheet containing the following data and formula:

```
|      |   A    |   B    |   C    |   D    |
|======|========|========|========|========|
|    1 |    3.00|    4.00|        |        |
|    2 |    B1+1|   A1+B1|        |        |
|    3 |   B2+A4|    A2+1|        |        |
|    4 |    1.00|    2.00|    3.00|    4.00|
```

The formulae of our example spreadsheet

And here's the same spreadsheet but this time with the results:

```
|      |   A    |   B    |   C    |   D    |
|======|========|========|========|========|
|    1 |    3.00|    4.00|        |        |
|    2 |    5.00|    7.00|        |        |
|    3 |    8.00|    6.00|        |        |
|    4 |    1.00|    2.00|    3.00|    4.00|
```

What it looks like on screen

If we now copy the block of cells from A1 to B3 into cells C1 to D3 all of the formula contained within the copied block have to be adjusted like this:

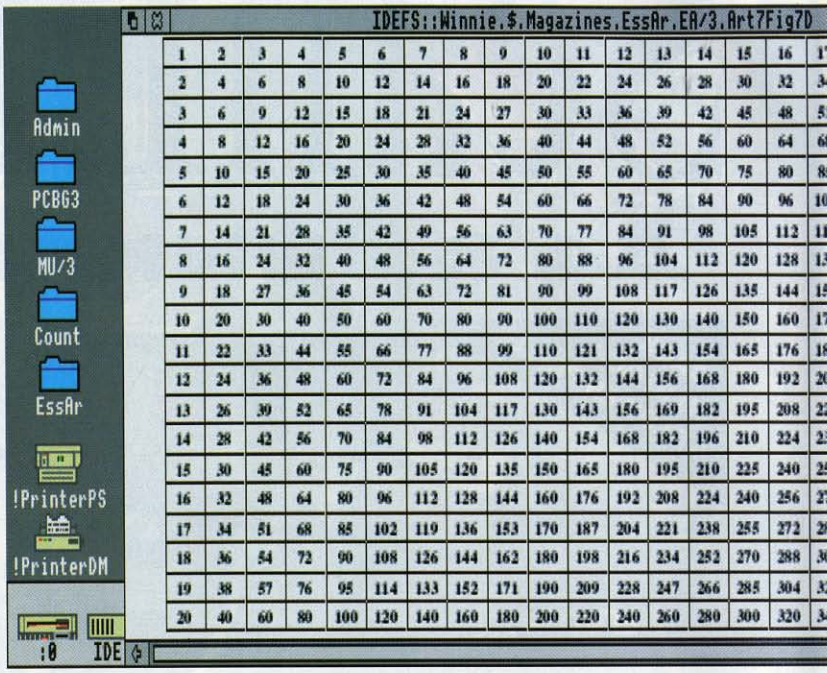
```
|      |   A    |   B    |   C    |   D    |
|======|========|========|========|========|
|    1 |    3.00|    4.00|    3.00|    4.00|
|    2 |    B1+1|   A1+B1|    D1+1|   C1+D1|
|    3 |   B2+A4|    A2+1|   D2+C4|    C2+1|
|    4 |    1.00|    2.00|    3.00|    4.00|
```

The formulae after copying the first two columns

Notice the way that numbers have remained the same while the formula have moved to reflect their new position. The result of this copy being the following:

```
|      |   A    |   B    |   C    |   D    |
|======|========|========|========|========|
|    1 |    3.00|    4.00|    3.00|    4.00|
|    2 |    5.00|    7.00|    5.00|    7.00|
|    3 |    8.00|    6.00|   10.00|    6.00|
|    4 |    1.00|    2.00|    3.00|    4.00|
```

How it looks on screen



IDEFS::Winnie.$.Magazines.EssAr.EA/3.Art7Fig7D

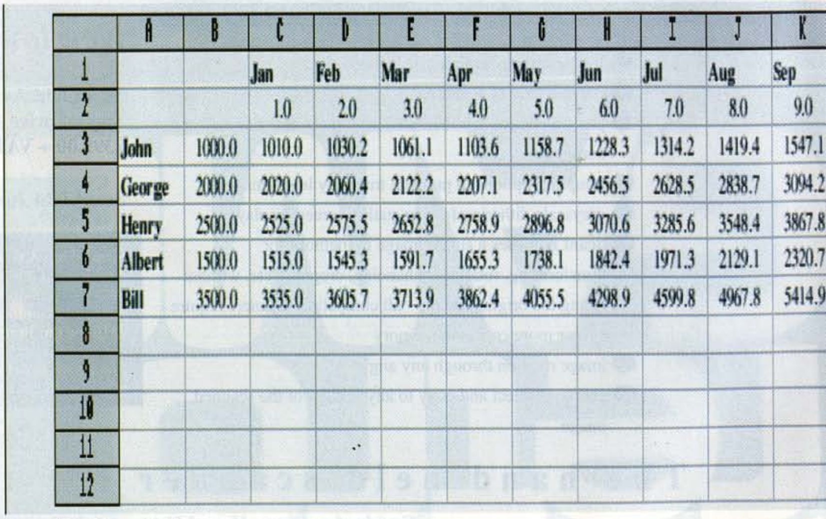
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64
5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112
8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128
9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176
12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208
14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224
15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240
16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256
17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272
18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288
19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304
20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320

Multiplication tables made easy

Although during most copies you will find that you want the reference to change, sometimes you might not. You might always want to refer to the same fixed cell position all the time. This is known as *Fixed* or *Absolute* referencing.

This could happen if, for example, you chose a particular cell to hold a fixed value such as dollar rate or current interest rate. There could be several cells around the spreadsheet all referring to this one cell.

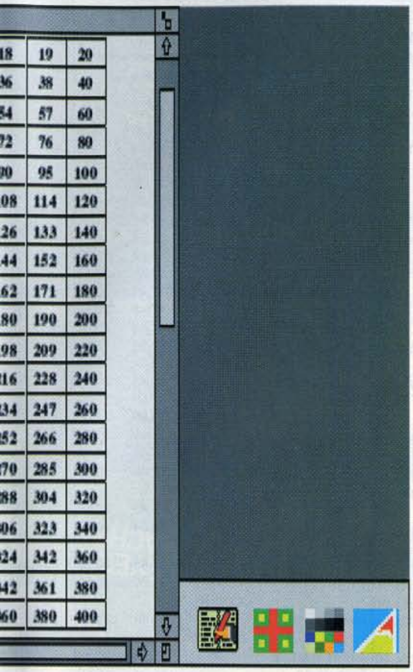
To make this possible within Schema just prefix



	A	B	C	D	E	F	G	H	I	J	K
1			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2			1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
3	John	1000.0	1010.0	1030.2	1061.1	1103.6	1158.7	1228.3	1314.2	1419.4	1547.1
4	George	2000.0	2020.0	2060.4	2122.2	2207.1	2317.5	2456.5	2628.5	2838.7	3094.2
5	Henry	2500.0	2525.0	2575.5	2652.8	2758.9	2896.8	3070.6	3285.6	3548.4	3867.8
6	Albert	1500.0	1515.0	1545.3	1591.7	1655.3	1738.1	1842.4	1971.3	2129.1	2320.7
7	Bill	3500.0	3535.0	3605.7	3713.9	3862.4	4055.5	4298.9	4599.8	4967.8	5414.9
8											
9											
10											
11											
12											

Forecasting using replication

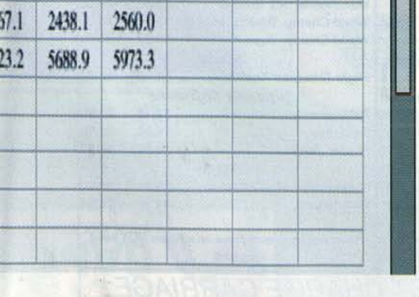
Barry Mallett continues his series on making the most of spreadsheets



18	19	20
36	38	40
54	57	60
72	76	80
0	95	100
08	114	120
26	133	140
44	152	160
62	171	180
80	190	200
98	209	220
16	228	240
34	247	260
52	266	280
70	285	300
88	304	320
06	323	340
24	342	360
42	361	380
60	380	400

g data

each of the cell reference parts with the @ sign. Using our previous example, if cell A2 had the absolute reference @B@1+1, when the copy had been performed to cell C2 this would also have contained @B@1+1. We'll go into more detail on this later with a real example of Replicate, but please note that you can make an absolute reference to either the row, the column or both.



L	M	N	O	P	Q
	Nov	Dec			
.0	3.0	5.0			
78.1	1625.4	1706.7			
56.1	3250.8	3413.3			
45.1	4063.5	4266.7			
57.1	2438.1	2560.0			
23.2	5688.9	5973.3			

On the move

As the name suggests, a move transfers a cell, or a block of cells, from one position to another, the original position becoming empty. One very useful feature of the move command is that it will allow you to move a block of data so that parts of it overlap its original position.

Using the previous example we'll move the block A1><B3 to B1><C3 as follows:

```
|      |   A    |   B    |   C    |   D    |
|======|========|========|========|========|
|    1 |        |    3.00|    4.00|        |
|    2 |        |    C1+1|   B1+C1|        |
|    3 |        |   C2+A4|    B2+1|        |
|    4 |    1.00|    2.00|    3.00|    4.00|
```

Shifting some cells

There is a very interesting point to note here. All the moved numbers are the same in their new cells but only some of the formulae have changed their reference. Look specifically at cell A3 which was B2+A4. Only the B2 reference has changed – to C2, while the A4 has remained the same.

This is because in references the adjustment is only made to cells that are moved. References from within the moved block to cells outside the moved block are not adjusted.

The copy command can only perform a single copy, however you can use the Replicate option to make multiple copies of a cell or block of cells. Once again using an example let's see how Schema handles this operation.

Take a look at the forecasting illustration. There are five people: John, George, Henry, Albert and Bill – cell references A3 to A7. Each has started the year with a set amount of money – B3 to B7 – which they expect to grow each month at a different rate – C2 to N2.

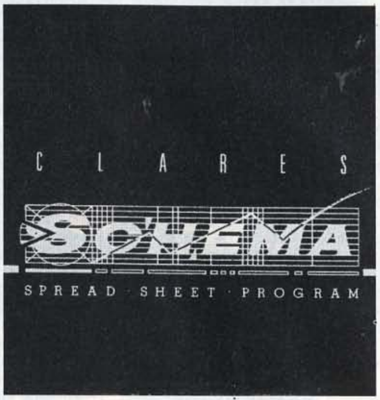
How much money will they have at the end of each month, if they don't spend any?

We could put (B3/100)*C2+B3 in C3, (B4/100)*C2+B4 in C4 and so on. In all cases the formula is the same except that in some cases the cell references change. In each case the cell reference for column B changes, but in all cases C2 remains constant.

If we therefore select cells C3 to C7 and input (B3/100)*C2+B3 once, the formula is input to all the January cells amending the correct references for each.

Will it calculate all the figures for January? Yes, but as well as adjusting the starting amount column it is also adjusting the percentage column – C2. We therefore have to give the percentage column an absolute reference so that it does not alter: (B3/100)*@C@2+B3.

Now we have successfully negotiated the figures for January simply by selecting and inputting a formula once. It would be extremely nice if we could now do the remaining 11 months without inputting another formula. We can, by the use of replication. Before we do this we have to adjust one thing in our original formula – cell reference C2.



If we are going to use this formula for February to December the absolute row reference @2 must remain but the column absolute reference @C is no longer true, because each month will use a different column.

The formula in cell C3 should therefore be (B3/100)*C@2+B3. Now select the block C3 to C7 – coloured yellow – and select cell D3. This is green as the selected cell is outside the selected block.

Now what we want to do is copy the selected block – C3 to C7 – starting at selected cell D3, 11 times horizontally. Via the main menu Selection=>Replicate enter 11 to the horizontal box and click OK. You will find that all the 12 months have now been filled in, with the correct cell references for all the people, and all you have done is input the formula once.

Basic education

This is a very simple example of replication showing you that it is no more than a very clever multiple copy command. Whereas with copy you can only repeat an area once, with replication you can repeat something, either horizontally, vertically or both, as many times as you require.

Let me pose a question. How many cells do you have to write information into to create a spreadsheet of multiplication tables from 1 to 20? The least I appear to be able to do it with is three.

Make yourself a spreadsheet which has 20 rows and 20 columns.

- Input 1 to cell A1.
- Select the block of cells A2 to A20 with A2 as the first selected cell.
- Input A1+1. You should now have 1 to 20 down the A column.
- Now select column B with B1 as the selected cell.
- Input (A@1+1)*@A1. This puts your 2 times table in column B.
- Now make your selected cell C3, keeping column B as your selected block. Via the Selection=>Replicate make horizontal equal to 18 and click OK. This should result in a matrix of numbers 20 by 20 containing the multiplication tables for 1 to 20 for 1 to 20.

● *Next month we'll be taking a comprehensive look at titling and evaluation.*

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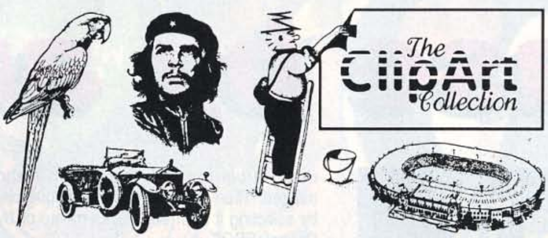

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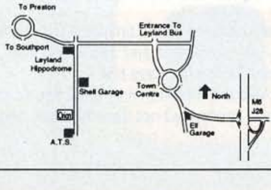

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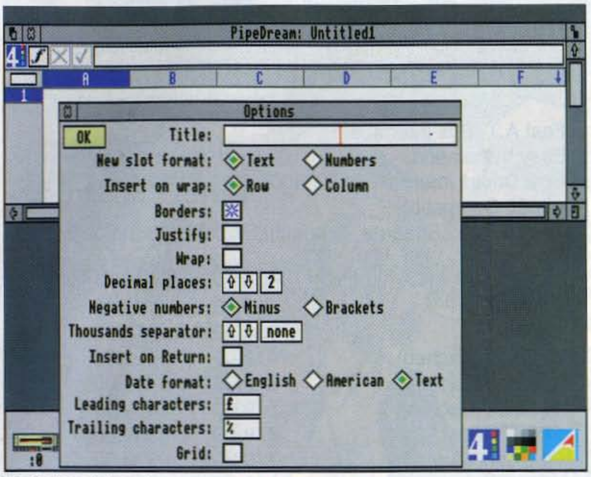
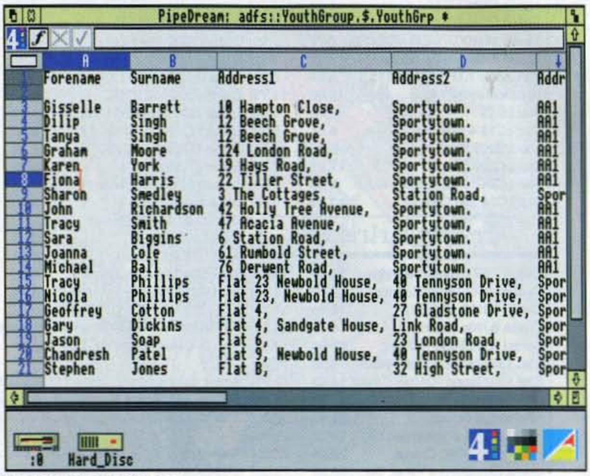


PipeDream: Untitled1

Options

- Title:
- New slot format: ● Text ○ Numbers
- Insert on wrap: ● Row ○ Column
- Borders: ☒
- Justify: ☐
- Wrap: ☐
- Decimal places: 2
- Negative numbers: ● Minus ○ Brackets
- Thousands separator: none
- Insert on Return: ☐
- Date format: ○ English ○ American ● Text
- Leading characters: £
- Trailing characters: %
- Grid: ☐

The Options dialogue box



PipeDream: adfs::YouthGroup.$.YouthGrp *

	A	B	C	D	
1	Forename	Surname	Address1	Address2	Addr
2					
3	Gisselle	Barrett	10 Hampton Close,	Sportytown.	AA1
4	Dilip	Singh	12 Beech Grove,	Sportytown.	AA1
5	Tanya	Singh	12 Beech Grove,	Sportytown.	AA1
6	Graham	Moore	124 London Road,	Sportytown.	AA1
7	Karen	York	19 Hays Road,	Sportytown.	AA1
8	Fiona	Harris	22 Tiller Street,	Sportytown.	AA1
9	Sharon	Smedley	3 The Cottages,	Station Road,	Spor
10	John	Richardson	42 Holly Tree Avenue,	Sportytown.	AA1
11	Tracy	Smith	47 Acacia Avenue,	Sportytown,	AA1
12	Sara	Biggins	6 Station Road,	Sportytown.	AA1
13	Joanna	Cole	61 Rumbold Street,	Sportytown.	AA1
14	Michael	Ball	76 Derwent Road,	Sportytown.	AA1
15	Tracy	Phillips	Flat 23 Newbold House,	40 Tennyson Drive,	Spor
16	Nicola	Phillips	Flat 23, Newbold House,	40 Tennyson Drive,	Spor
17	Geoffrey	Cotton	Flat 4,	27 Gladstone Drive,	Spor
18	Gary	Dickins	Flat 4, Sandgate House,	Link Road,	Spor
19	Jason	Soap	Flat 6,	23 London Road,	Spor
20	Chandresh	Patel	Flat 9, Newbold House,	40 Tennyson Drive,	Spor
21	Stephen	Jones	Flat B,	32 High Street,	Spor

The Youth Group database

A database by an

SO FAR our data has been held in specially designed database packages. This month we will see how a more general package, PipeDream, can be used as a database. PipeDream is a popular Risc OS application which can be used as a spreadsheet, a wordprocessor, a database and for drawing charts.

Because it is not designed specifically as a database, PipeDream is not used in the same way as packages such as Squirrel, Multistore, Flexifile and Junior Database. In particular the data is displayed differently.

Most databases show records individually on the screen, PipeDream displays records as a single row across the page, with the fields tabulated in columns. This way a number of records are displayed as a table, with the PipeDream window looking at a section of it.

There are a number of advantages of using PipeDream over a standalone database:

- It is not necessary to purchase a number of different packages – PipeDream can be used as a complete home office system.
- Using a single package means that there is only one set of commands to learn.
- It is possible to use spreadsheet expressions within a database, either to relate records or to summarise information that it contains. This summary can be in graphical form.
- Wordprocessor facilities, such as the spell checker, can be used.

Let's take the Youth Group database which has featured in earlier articles and convert it. PipeDream databases are created just like a spreadsheet, with each column set to a width appropriate for the data it holds. Word wrap should be turned off in the Options dialogue box to ensure that long fields are not split between lines.

To start the database enter the names of the fields in the columns of row 1. Position the carat in row 2 and *fix* the row by using the command Control+LFR. When the database is scrolled down in the window the labels and a blank line are always displayed at the top.

Making space

KEY TIP

If there are a lot of fields in a PipeDream database it is possible to set the column field widths to a small number of characters, say six, to show the first few letters of each field, but with more fields on the screen at the same time. The entire contents of a field can be seen by temporarily widening the column or scrolling within the slot.

The records are then entered, starting in row 3.

Sorting

Most database operations can be summarised by the three S's – Sorting, Searching and Selecting – and these are all available to PipeDream users.

Normally a database like this is sorted in alphabetical order of surname. To do this the whole of the data – from row 3 to the bottom – should be marked. Then display the sort dialogue box, either by selecting it from the Blocks menu, or by keying Control+BSO.

To sort by surnames in column B, the first Sort by column entry should have B in it. To further sort members with the same surname into alphabetical order of forename, put A for column A in the box below. Ascending order means that they will be in the order A to Z, which is what is wanted in this case. Click on the OK box and the database will be rearranged.

Finally remove the markers by keying Control+Q.

Searching

Searching within a PipeDream database is done in exactly the same way as searching within a wordprocessor document or spreadsheet. The search dialogue box is obtained from the Blocks menu or by keying Control+BSE, and the required string entered in the box.

Often we only want to find the string if it is contained in a specific field. This is achieved by marking the corresponding column and switching on the Search only marked block option.

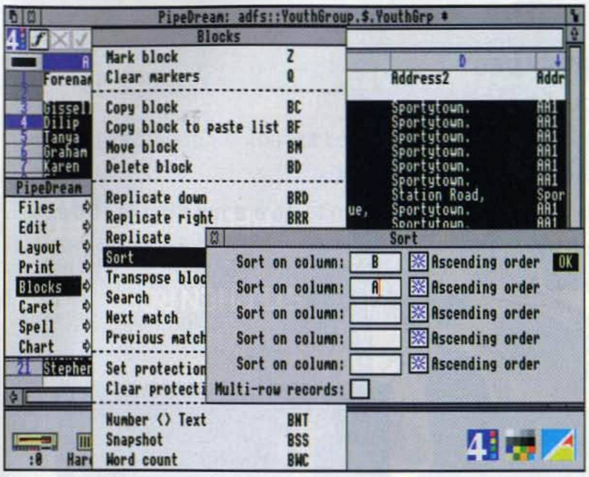
It's easy to create a file containing a selection of records in a PipeDream database, using the extra facilities in the File save dialogue box. Suppose we

PipeDream versions

The examples in this article all use the most recent release, PipeDream 4. The older PipeDream 3, as well as PC PipeDream and Z88 PipeDream, allow the same selection criteria to be used in the Print dialogue box as in the file Save box.

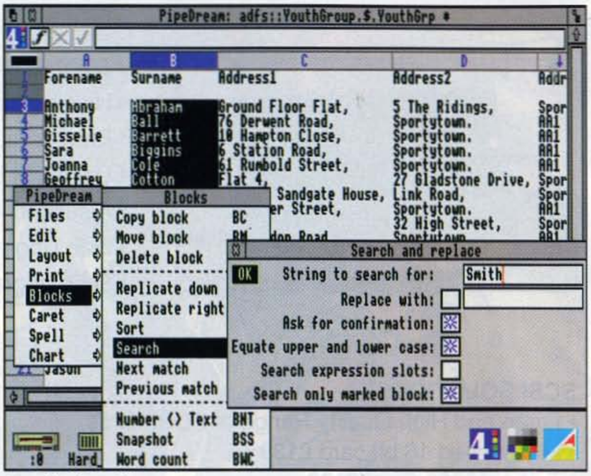
Also the arguments of database functions are different in PipeDream 4, so databases which contain a report section will not transfer easily between PipeDreams 3 and 4.

John Allen takes the database tour through PipeDream


PipeDream: adfs::YouthGroup.$.YouthGrp *
Blocks
Mark block Z
Clear markers Q
Copy block BC
Copy block to paste list BF
Move block BM
Delete block BD
Replicate down BRD
Replicate right BRR
Replicate
Sort
Transpose block
Search
Next match
Previous match
Set protection
Clear protection
Number <> Text BNT
Snapshot BSS
Word count BWC
PipeDream
Files
Edit
Layout
Print
Blocks
Caret
Spell
Chart
Sort
OK

Sort on column: B ☒ Ascending order
Sort on column: A ☒ Ascending order
Sort on column: ☒ Ascending order
Sort on column: ☒ Ascending order
Sort on column: ☒ Ascending order
Multi-row records: ☐

Sorting in operation


PipeDream: adfs::YouthGroup.$.YouthGrp *
PipeDream
Files
Edit
Layout
Print
Blocks
Caret
Spell
Chart
Blocks
Copy block BC
Move block BM
Delete block
Replicate down
Replicate right
Sort
Search
Next match
Previous match
Number <> Text BNT
Snapshot BSS
Word count BWC
Search and replace
OK

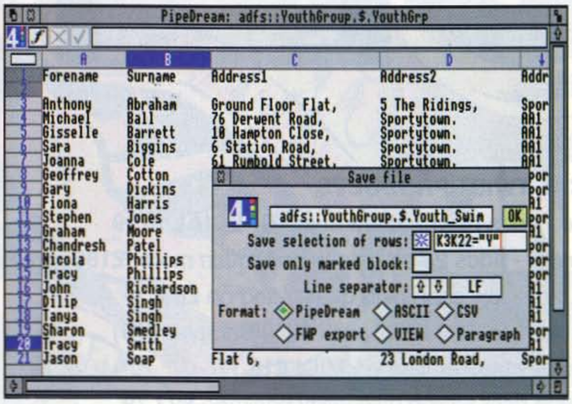
String to search for: Smith
Replace with: ☐
Ask for confirmation: ☒
Equate upper and lower case: ☒
Search expression slots: ☐
Search only marked block: ☒

Searching for a string

other name

Number of subscriptions now overdue:

Up to date reports are available


PipeDream: adfs::YouthGroup.$.YouthGrp
Save file
OK

	Forename	Surname	Address1	Address2	Addr
3	Anthony	Abraham	Ground Floor Flat,	5 The Ridings,	Spor
4	Michael	Ball	76 Derwent Road,	Sportytown.	AA1
5	Gisselle	Barrett	10 Hampton Close,	Sportytown.	AA1
6	Sara	Biggins	6 Station Road,	Sportytown.	AA1
7	Joanna	Cole	61 Rumbold Street,	Sportytown.	AA1
8	Geoffrey	Cotton			
9	Gary	Dickins			
10	Fiona	Harris			
11	Stephen	Jones			
12	Graham	Moore			
13	Chandresh	Patel			
14	Nicola	Phillips			
15	Tracy	Phillips			
16	John	Richardson			
17	Dilip	Singh			
18	Tanya	Singh			
19	Sharon	Smedley			
20	Tracy	Smith			
21	Jason	Soap	Flat 6,	23 London Road,	Spor

adfs::YouthGroup.$.Youth_Swim
Save selection of rows: ☒ K3K22="Y"
Save only marked block: ☐
Line separator: LF
Format: ◈ PipeDream ◇ ASCII ◇ CSV ◇ FWP export ◇ VIEW ◇ Paragraph

Selecting swimming club members

want to select members of the swimming club, these are denoted by a Y in column K.

Click the button alongside Save selection of rows and place the carat in the box to its right, entering the condition: K3K22="Y". This means *if any of the slots in the given block contain "Y" then save the whole record.* Then drag the PipeDream icon to a directory window and a new database of the swimming club members will be created.

Optional format

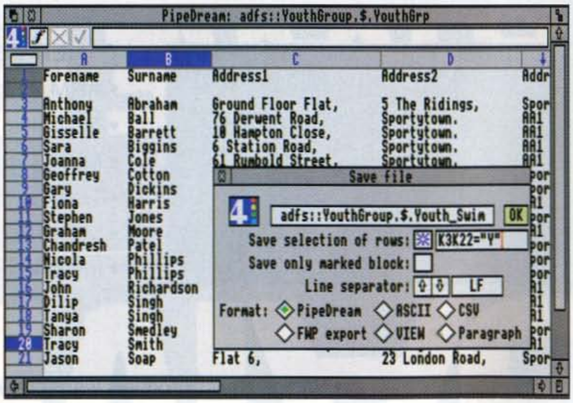
The selected file does not have to be saved in the standard PipeDream format. Saving it as a CSV file will ease the transfer of data to other applications. On the other hand an ascii format file can be used as data for mailmerging with a PipeDream word-processing document or, to use the PipeDream jargon, mailshots. More about this aspect next month.

Because PipeDream is also a spreadsheet any of the slots within a database can be linked by expressions. These can be straightforward mathematical relationships between different fields in each record or, at the other extreme, can be a continually changing report on the database.

For example, at the bottom of the Youth Group database a count of how many subscriptions are due for renewal can be calculated, and this will always be up to date. Alternatively, a database of sales performance can show the average amount of each sale – the highest and lowest.

It is very simple to construct complex reports which can be printed separately from the database by marking the report section and selecting Print marked block in the Print dialogue box.

PipeDream databases can be constructed with more than one row for each record, for example the addresses of the Youth Group members. This is achieved by ensuring that there is only one row in any field which will be used as a sort key with Multi-row records selected in the Sort dialogue box.


PipeDream: adfs::YouthGroup.$.YouthGrp
Save file
OK

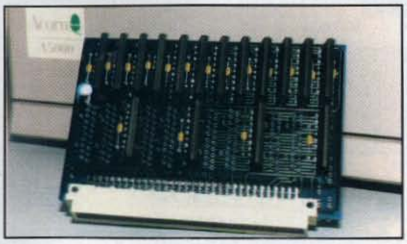
adfs::YouthGroup.$.Youth_Swim
Save selection of rows: ☒ K3K22="Y"
Save only marked block: ☐
Line separator: LF
Format: ◈ PipeDream ◇ ASCII ◇ CSV ◇ FWP export ◇ VIEW ◇ Paragraph

Multi-row records

This way of storing records is not really very useful as it is not possible to select records from such a database, because the selection procedure assumes that each row is a separate record.

- *Next month we'll see how data can be exchanged between different databases and other Risc OS applications.*

Vertical Twist



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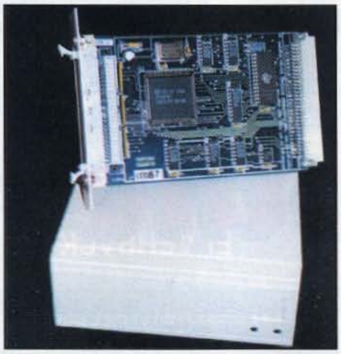

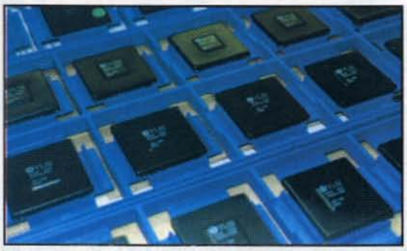

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Tel: (0373) 824200 Fax: (0373) 824300

Vertical Twist

CAD

Steve Bruntlett continues his series with an insight into newsletter design

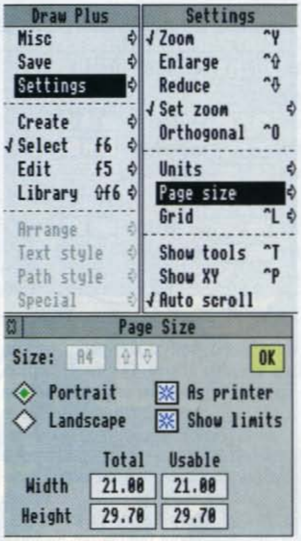
Hold the front page

HAVING used Edit in a minor way for text blocks in the articles dealing with poster and Christmas card design, let's take a more detailed look at its use in combination with the powerful graphics capabilities of DrawPlus and your own drawings or clip art.

If you have a computer and a printer you'll probably find people approaching you from time to time with requests for graphics, CVs, labels or an odd logo. Before you know it you've agreed to run the club membership, edit the school prospectus or produce the parish magazine. So the scenario I'll work on for this article is one where you've blithely volunteered to produce the club or church newsletter, but you can't afford to buy a professional DTP package.

Don't panic. You can produce quite acceptable, even professional, results using DrawPlus, Edit and a bit of clip art. You should try drawing your own clip art as you can spend a lot of money on the commercial variety and still find it doesn't include exactly what you need. Commercial clip art is available from an increasing number of sources, but there is also a lot of – much cheaper – public domain worth looking at.

For the purposes of this article I'll look at the use of clip art, text panel control, borders, headings and general layout. If you use an A4 portrait setting you'll be able to produce a newsletter of good quality using a new ribbon on a 24 pin dot matrix printer and of very good quality using a laser printer. If you don't have access to a laser printer you can use one of the increasing number of laser printing services which offer reasonably quick and cheap but high quality results.

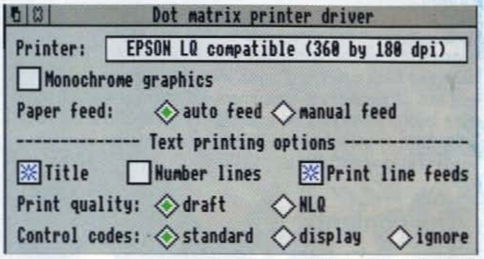


Size: A4

◆ Portrait ☒ As printer
◇ Landscape ☒ Show limits

	Total	Usable
Width	21.00	21.00
Height	29.70	29.70

Settings menu page size control panel



Printer: EPSON LQ compatible (360 by 180 dpi)

☐ Monochrome graphics

Paper feed: ◆ auto feed ◇ manual feed

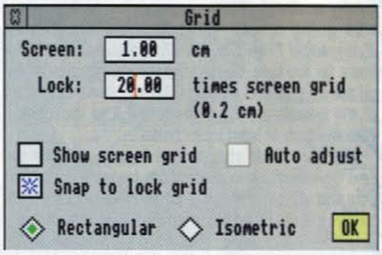
-------------- Text printing options --------------

☒ Title ☐ Number lines ☒ Print line feeds

Print quality: ◆ draft ◇ NLQ

Control codes: ◆ standard ◇ display ◇ ignore

Printer driver control panel



Screen: 1.00 cm

Lock: 20.00 times screen grid (0.2 cm)

☐ Show screen grid ☐ Auto adjust

☒ Snap to lock grid

◆ Rectangular ◇ Isometric

Grid setting control panel

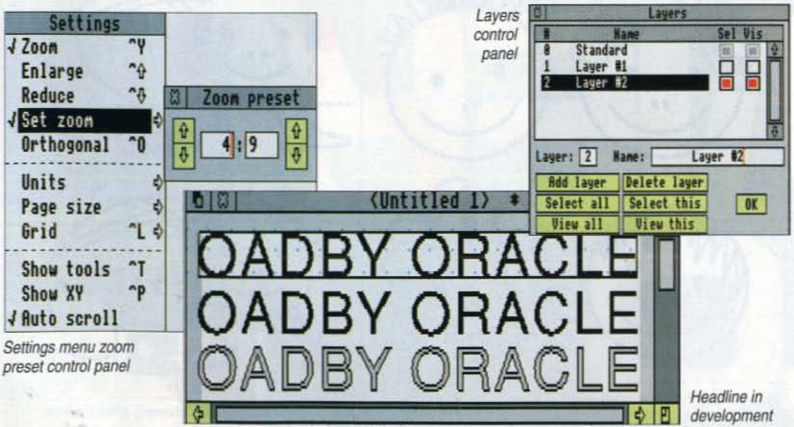
The basics

The first thing to do is to load in a printer driver by double-clicking on its file icon. To check its default settings, press the Menu button with the mouse pointer and follow the Page Size option across to bring up the Printer Driver Page Size sub-menu which gives the settings for the page borders. These can be altered or reduced to give a bit more paper area by trial and error.

The best way to run DrawPlus is from a hard disc but if you have an A3000 or A310 with two megabytes of memory, running !System and !Fonts from an 800k ram disc is the next best thing and cuts out most of the disc swapping.

Once DrawPlus is running, use the Grid control panel to set the gridlock to something like a setting of 20. You'll still have some fine control over the layout without dropping out of Gridlock completely which generally makes accurate alignment of work a bit tricky. Use the Zoom preset option available under the Settings sub-menu to set a zoom size of 4:9.

When toggled using the Zoom option on the Settings menu or from the toolbox Zoom option, this will display your A4 page as large as possible on the screen giving you a clear idea of how your work looks as a whole. You can toggle back to full size to work on the layout in detail at any stage.



Zoom preset: 4:9

#	Name	Sel	Vis
0	Standard	▨	▨
1	Layer #1	☐	☐
2	Layer #2	🟥	🟥

Layer: 2 Name: Layer #2

Settings menu zoom preset control panel

Layers control panel

Headline in development

Setting up layers

A good way to proceed with designing the layout of the newsletter is to design an underlying grid or series of columns on which to base your work. Most DTP programs allow you to use guide frames and so does DrawPlus.

You can use up to 32 layers if required which allows you to have different elements of a drawing on a different level, much as you would expect from a CAD program. The use of layers is described in detail in the DrawPlus manual which comes as a readme file on the program disc and which you can read and print using Edit. However, it may be useful to go over their use briefly.

For this newsletter there are an extra three layers: Layer #0 is reserved for use by normal Draw files. The first of the extra layers contains guide frames, the second text and the third graphics. Each can be selected or de-selected, visible or invisible.

This means that you can use underlying guide frames to line up text and graphics but they can be switched off before printing. You don't necessarily need text and graphics on different layers but it may

➤

be a feature worth getting used to. The first layout consists of a simple banner headline box across the page and three columns of equal width for graphics and text. If you want to experiment with more creative layouts, look at good examples in books and magazines or get hold of DTP Seeds from 4Mation which is bulging with ideas.

The content

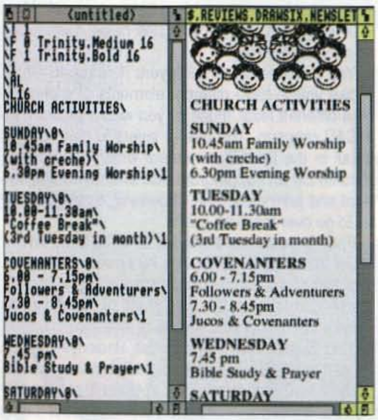
The title of the newsletter is fairly important in grabbing people's attention and either needs to be catchy or relating to the organisation or the area. I was going to call my newsletter the *Oadby Evangelical Free Church Weekly Newsletter*, but that's far too long, doesn't fire the imagination or roll off the tongue and would be far too small at the top of the newsletter. So I shortened it to the *Oadby Oracle* which at least looks better.

You can either stick to text format and use the Text Style options to change the font and adjust the size and shape of the title. Or you can decide which font you want in advance and convert the title to a graphics object using the Text to path option under the Special sub-menu. This means that you can adjust its shape by eye and get it to fit a space accurately and easily, whereas using text takes a bit of fiddling with the size/height to get it exactly how you want it – even if you can set text in fractional point sizes.

Try it both ways and see which works best for your purposes, though turning it to a graphic object means that you can use a variety of outlining and fill techniques to make it a bit more special.

Once you've decided what to include in your newsletter it's a matter of typing the text into Edit and transferring it on to layer two. In the final newsletter there's an introduction with an illustration, a couple of reports on activities and a few notices about forthcoming attractions, plus a few illustrations to liven it up.

The first addition was to add the church logo, designed in DrawPlus using circles and lines. The best way to merge Draw files is to drag one into the bottom left hand corner of the drawing on screen and let go. This should ensure that both drawings are overlaid from the same point. The merged Draw file can then be scaled and positioned. Using the Scale option under the Arrange sub-menu, you can simply reduce the logo in size. But the line thickness stays constant whether you enlarge or reduce a graphic object. The problem with altering this is that if your Draw file has lines of varying thickness, by changing the line thickness of a grouped graphic object you change all the lines to the same thickness.



```
\T 1
\F 0 Trinity.Medium 16
\F 1 Trinity.Bold 16
\1
\AL
\L16
CHURCH ACTIVITIES\

SUNDAY\0\
10.45am Family Worship\
(with creche)\
6.30pm Evening Worship\1

TUESDAY\0\
10.00-11.30am\
"Coffee Break"\
(3rd Tuesday in month)\1

COVENANTERS\0\
6.00 - 7.15pm\
Followers & Adventurers\
7.30 - 8.45pm\
Jucos & Covenanters\1

WEDNESDAY\0\
7.45 pm\
Bible Study & Prayer\1

SATURDAY\0\
```

CHURCH ACTIVITIES

SUNDAY
10.45am Family Worship
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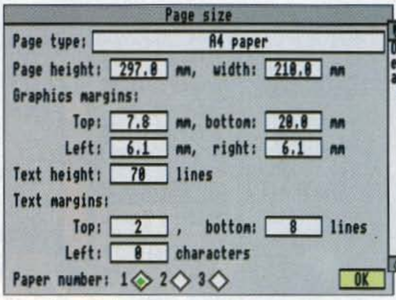
WEDNESDAY
7.45 pm
Bible Study & Prayer

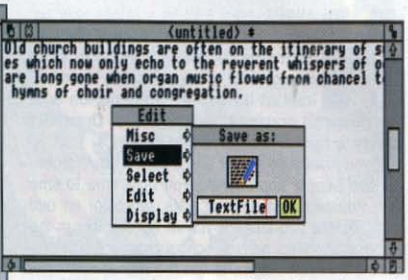
SATURDAY

Figure I: Text block and Edit file



Page type: A4 paper
Page height: 297.0 mm, width: 210.0 mm
Graphics margins:
Top: 7.8 mm, bottom: 20.0 mm
Left: 6.1 mm, right: 6.1 mm
Text height: 70 lines
Text margins:
Top: 2 , bottom: 8 lines
Left: 0 characters
Paper number: 1◆ 2◇ 3◇

Page size control panel



```
Old church buildings are often on the itinerary of s
es which now only echo to the reverent whispers of o
are long gone when organ music flowed from chancel t
 hymns of choir and congregation.
```

TextFile

Edit window and save file

When you enter your purple prose via an Edit file, the standard message about the file not having a standard header will be displayed. But click on OK, carry on and export it back into Edit as we did with the text files in the article on poster design. You can keep transferring the text file between DrawPlus and Edit to change the formatting and font size and style until you're happy with the result, see Figure I.

Coping with text

Twelve point Trinity.Medium is easy to read though you might want to use Homerton which is a sans serif typeface – no twiddly bits at the ends of the letters. Corpus looks a bit like a typewriter typeface. The text blocks can be positioned and resized by using the Select box controls, and titles can be added either as lines of text or text turned into graphics.

Try not to use more than a couple of different fonts otherwise the newsletter will look messy. It is better to use the full range of the family of typefaces in the chosen font. For instance, Bold and Italic with a larger size for headings and titles. Sideways text can look effective but needs using sparingly and with care.

Drawings can be gathered from other creations – in this case we have faces, a map and a baby. The faces are easy to draw using circles and straight or continuous lines for the hair and then grouping a few different faces into a crowd. You'll probably notice that some are repeated and some are simply flipped left and right. Some have also been rotated to avoid them all looking the same.

Figures II and III show a panel of sample faces and a baby with their components and control points. You need to use a white fill for faces so that when overlaid you can't see through them to the face underneath. However, you may find that you can't then see the eye, nose and mouth details. If so, use the Forward option available under the Select sub-menu to bring such details to the front of the drawing.

The rest is down to typing directly on to the drawing or continuing to use Edit to put text into text panels. The important thing is to try it and see how it works, become confident in its use and then use it to your advantage.

You should be able to produce a good quality newsletter with a bit of patience using the above techniques and hopefully this article shows that you can use simple DTP to produce professional results without having to buy professional packages.

● *Next month: Yet another application – creating your own labels.*

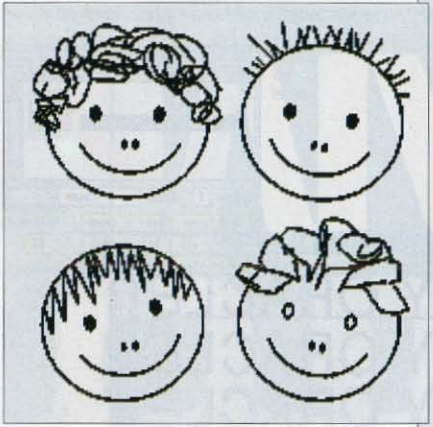


Figure II: Miscellaneous faces

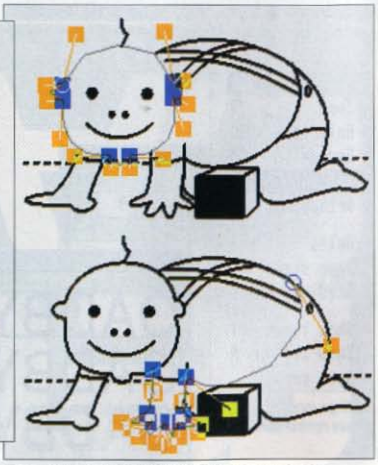


Figure III: Drawing of babies showing control points

Software Bargains and Mercury Games

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Twinworld	19.95	15.95
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Saloon Cars	24.95	22.45
Chequered Flag	24.95	21.95
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Exotic Adventures .. S Lain	24.95	22.45
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Manchester Utd Europe	25.99	25.99
Microdrive World Edition	29.95	26.95
Jahangir Khan W. Ch, Squash	25.99	21.95
World Champ. Boxing Mgr	25.53	21.95
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Magnetic Scrolls Collection	34.99	29.95
Real McCoy	29.95	26.95
Real McCoy 2	29.95	26.95
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Rhapsody 2	61.95	51.95
Score Draw	61.95	54.95
Speech	19.95	15.95
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Fun School 2 6-8yrs	20.99	15.95
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(SRP = Suggested Retail Price) All prices include VAT @ 17.5%

This is only a selection of our range of software for the Arch!
Please 'phone or write for our catalogue - **IT'S ABSOLUTELY FREE!**

Software Bargains & Mercury Games
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Holed Out Extra Crses 1	6.50	7.75	8.50
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(Prices are correct at the time of going to press, E&OE)

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A3000 BBC Archimedes Micro with 3.5" Floppy Disc Drive and a mouse, upgraded to 2Mb RAM, COLOUR Monitor + Lead, 20Mb fast IDE Hard Disc Drive, 'Compression' Utility to increase the Hard Drive capacity to Typically 40Mb, The highly acclaimed Computer Concept's Impression Junior DTP software package.

RRP: £1299

Sale Offer Price: £849

Above Package plus Acorn's Learning Curve **£892**

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All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

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P.S. A310 upgrades require a backplane and a fan.

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• A3000 40Meg Hard Disc + Podule	£429

For Archimedes IDE Hard Disc turn to page 14

Desk Top Publisher

Acorn's Archi DTP Package	£108
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More Archimedes Products
See Pages 3, 5, 6, 8, 10, 14

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A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

The card is provided with an extensive manual explaining installation, all software commands, connector pin outs, hardware addresses and example programs.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices.

£42

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. **£15**

Silicon Vision

Gerber Plot	£95	Solids Render	£120
Solid CAD	£120	Solid Tools	£279
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Super Dump	£22	Share Holder	£135
Arc PCB Professional			£275
Realtime Solids Modeller			£136

Archimedes to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.
New RISC OS Version **Only £15**

Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

• A300/A3000	£21	• A400	£25

Watch this space for our Low Cost – High Performance 4Mb and 8Mb RAM Upgrades for the A5000

LANGUAGES (Archimedes)

ISO-PASCAL; FORTRAN 77			**£77 each**
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Macro Assembler	£40	Risc Basic	£120
Robo Logo	£69	Risc FORTH	£110

NEW 256 Grey-Scale Scanner

Watford proudly introduces its new innovative 256 grey-level hand scanner for the Archimedes range of micros. It offers up to 400 dpi scanning resolution, complete with software.

256 Grey-Scale Scanner is ideal for incorporating pre-drawn logos, artwork, photographs and sketches into desktop publishing documents and other graphics programs. Designed by our own R & D team, it offers the best overall scanning solution for Archimedes micro. Just compare the competition on our price and these outstanding features:

- Full 105mm 400dpi scanning operation in just 3mS per line! (Twice as fast as most scanners.)
- Selectable 256/16/4 grey levels
- Full scan preview, scale to fit windows
- Complete set of image enhancement tools
- Single width podule
- True brightness and contrast control
- Fast RISC OS printing
- Five-function edge detection software, Laplace convolution matrix image enhancement, image smoothing, etc.

Special Launch Price
£185

ULTIMUM – Archimedes A3000 Podule Racking System

THE ONLY LOGICAL WAY TO EXPAND YOUR A3000 COMPUTER

Price: £149

Minerva's Archimedes Software

EasyWord	£18	Mailshot*	£27
Home Accounts	£35	Reporter*	£27
Time Tabler	£549	School Admin*	£65
System Delta	£59		

System Delta Program Reference Manual £29
** Requires System Delta to operate*

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Sales; Purchase; Order Processing and Invoicing; Nominal; Stock management
£79 per module
or Complete Business Package **£325**

ARM 3 Turbo Card

Simply The Best

Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £199. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £18.
(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)
In response to many of our customers requests, we have extended the Offer Price to 28/2/1992.

RRP £249

Offer Price £185

Acorn have satisfactorily evaluated Watford's ARM 3 upgrade and the A3000 upgrades are fitted by Acorn approved surface mount technology centre, therefore its fitment will not invalidate Acorn's warranty on the micro.

Continued→ → → → → → → → →

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL plus FREE OFFER (see below) **£399**

FREE OFFER

A 5.25" Double Sided, 40/80 track switchable 400K Disc Drive complete with cables and a Utilities disc incl. 2 games, plus

Gemini's OFFICE MATE & OFFICE MASTER packages on Disc consisting of: Database, Spreadsheet, Beebplot graphics. Accounts packs: Cashbook, Final Accounts, Mailist, Easyledger, Invoice & Statements, Stock Control.

FREE with every BBC Master purchased from us during February

Add-Ons & Accessories

Econet Module for the Master		£45
Twin ROM Cartridge for Master		£9
Quad ROM Cartridge for Master		£14
Master Reference Manual I	(No VAT)	£14
Master Reference Manual II	(No VAT)	£14
Master Advance Ref Manual	(No VAT)	£17
64K Upgrade Kit for B+		£32
Acorn 1772 DFS Kit complete		£49
ECONET Upgrade Kit for BBC B		£42
ALL ECONET UPGRADES Available		
ARIES' IEEE Interface for BBC B & Master		£238
Morley Teletext Adaptor with ATS Rom		£99
Ecolink		£270

Z88 Portable Micro

£179

FREE

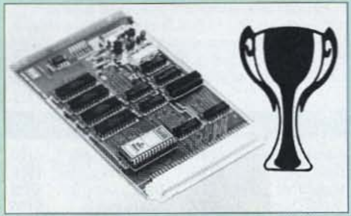
With every Z88 purchased from us, we are giving away absolutely FREE, a Z88 to BBC Interface Link, 4 rechargeable batteries and a compact Mains Battery Charger worth £38.

Z88 ACCESSORIES

• 32K RAM Pack or 32K EPROM Pack	£16
• 128K RAM Pack or 128K EPROM Pack	£32
• 512K RAM Pack	£86
• Z88 Eprom Eraser Unit	£38
• Z88 Spellmaster for Pipedream	£40
• Z88 Carrying Case	£8
• Z88 Computing Book	£9.95
• AA Nicad Rechargeable Battery	£1.50
• Battery Charger Compact & Fast	£6
• Z88 Serial Printer Cable	£8
• Z88 Parallel Printer Cable	£18
• Z88 to Archi Link	£15

• Z88 to BBC Link	£8	• Z BASE	£56
• Z88 to PC Link II	£27	• Z TAPE	£42
• Z88 to Macintosh	£32	• Z TERM	£42
• Z88 Mains Adaptor	£9	• Z88 Modem	£114

Archi Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £139

A Set of Colour Filters for colour image grabbing using a video camera **£16**

Archi Graphic Tablet

The Archi Graphic Tablet offers performance and accuracy comparable to other tablets priced at well over £400, and has the useful addition of a liftable cover, which can hold tracing material or menu templates securely. The package is supplied complete with sophisticated Archi software. (Now, fully LinCAD compatible. Recommended by Linear Graphic for use in Education).

(FREE this month, PC Mouse Drivers & Art package)

Special Price £175

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£15**

Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus **£110**

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: **£2**

Acorn & Watford DFSs

• Watford sophisticated DFS ROM	£16.00
• Watford DFS Kit complete	£69.00
• We will exchange your existing ROM for Watford's ultimate DFS ROM at only	£12.00
• DFS Manual (comprehensive)	£6.95
• Acorn DNFS ROM	£17.00
• Acorn ADFS ROM only	£25.00
• Acorn 1772 DFS ROM Kit	£49.00

(The single Density DFS system is now old technology. Like Acorn, Watford too have decided to replace it with the their more up-to-date 1770 DDFS interface. We have informed most of the software houses of this decision in order that they can ensure compatibility with our highly sophisticated and fully Acorn compatible DDFS).

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1770 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1770 DFS, plus the added features.

Added features include:

- Acorn ADFS compatible – Use ADFS on our DDFS board.
- Tube host Code – No longer any need to have the DNFS in your machine to use Co-Processors, even the CoPro and Master 512.
- Auto 40-80 Track sensing – no need to fuss with 40/80 track switches (even works with protected disks).
- An extremely powerful 8271 emulation – ensuring compatibility with almost all software.
- New low profile – small footprint board.
- Fits with all third party ROM boards.
- Option to double the speed of file handling operations – BPUT and BGET.
- Operates in both single and double density modes.
- OSGBPB has been recoded, increasing still further the speed of file handling.

Please note that not all DDFS's are capable of providing either the full 80% storage increase or of allowing a file the full size of the disk – Ours allows both of these!

If you already have a DDFS (any manufacturer), and wish to upgrade to our MkII version, then simply return your existing ROM and DDFS board and we will supply the new DDFS for only **£39.00.**

• SPECIAL PRICE		£44.00
• DDFS Manual	(No VAT)	£6.95
• We will exchange your existing DFS Kit for our sophisticated DDFS for only		£30.00

Please note, as the MkII DDFS is a hardware and sofware upgrade, it is not possible for existing Watford DDFS users to simply exchange the ROM for the new version.

3M – Diskettes

3M – SCOTCH Diskettes with Lifetime warranty from Watford Electonics your 3M Appointed Distributor

• *10 x 5.25" S/S D/D 40T (744)*	*£5*
• *10 x 5.25" D/S D/D 40T (745)*	*£5*
• *10 x 5.25" S/S D/D 80 Track (746)*	*£7*
• *10 x 5.25" D/S D/D 80 Track (747)*	*£7*
• *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT*	*£9*
• *10 x 3.5" S/S D/D 40/80 Track*	*£7*
• *10 x 3.5" D/S D/D 40/80 Track*	*£7*
• *10 x 3.5" Double Sided High Density*	*£13*

Top Quality 3.5" & 5.25" Diskettes

To complement our range of Quality Discs and Disc Drives. WE are now supplying SPECIAL OFFER packs of 10 Lifetime guaranteed discs. Each disc has a reinforced hub ring. Supplied complete with selfstick labels and a Plastic Library Disc Box.

• *10 x **M3** 3.5" D/S D/D 80 Track*	*£7*
• *10 x **M9** 3.5" D/S High Density*	*£12*
• *10 x **M4** 5.25" S/S D/D 40 Track*	*£5*
• *10 x **M5** 5.25" D/S D/D 40 Track*	*£5*
• *10 x **M7** 5.25" D/S D/D 80 Track*	*£7*
• *10 x **M8** 5.25" D/S H/D Hi-Density*	*£9*
• ***M2** 3" Double Sided*	*£2.50 each*

VISA

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 250234 or 233383

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted.

Various UK "manufacturers" of disc drives for the BBC Micro (more accurately, "packagers" label other manufacturers drives with their own name). We buy the high quality NEC and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.

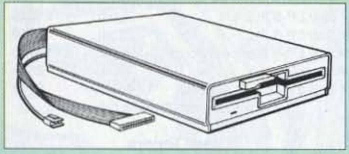
If you look around the popular BBC Micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.

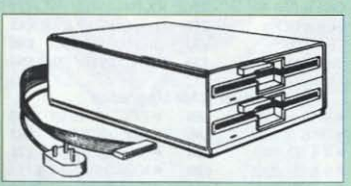
Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate (extensive tests within our workshops have confirmed this). All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. ***Ideal for Schools & Colleges.***

When using a BBC Micro, most people find themselves short of desk space. The Watford's BBC Micro plinths form an ideal way of recovering some of this precious space. Your BBC Disc Drive and Monitor can all occupy the same vertical footprint and still be comfortably situated. With the Watford Double Plinth, your Disc Drive is mounted vertically at one side, leaving a very valuable area directly in front of you for such useful items as spare discs, pen, paper, reference manuals, etc. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).

P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"





Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	**£70**
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£138**
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	**£80**
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£153**

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Disc Drive/DDFS Offer

- The popular CLS400S 40/80 track switchable disc drive.
- Watford's popular Mk II DDFS Interface (allows up to 720K storage). Will run both in single & double density modes.
- A comprehensive DFS Operating manual

Bargain at Only **£116** (Offer valid until stocks last)

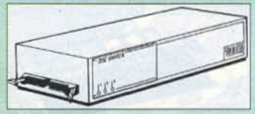
3.5" DISC DRIVE

These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	**£62**
• **CLD400S**:	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£83**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drive Sharer

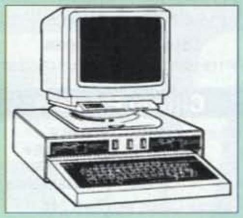


(Ideal for educational establishments)

A low cost alternative to the Econet system.Watford's Intelligent Disc Drive Sharer allows you to connect 3 BBC Micros (model B, B+ and Master series) to a single or double disc drive. Running under any DFS or DDFS, this intelligent unit will automatically queue the computers. Each computer has a status light dedicated to it. If it is green you will get immediate access to the disk, and red means that you are next in line. The unit plugs directly into the disc drive socket on each computer and is powered by the mains. (N.B. Not for use with ADFS.)

Price includes 3 Cables **£55**

Disc Drives in Monitor Stand



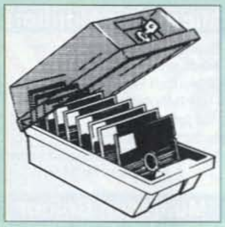
- **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use. **£165**
- **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5". **£154**

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

Antistatic Lockable Disc Storage Units

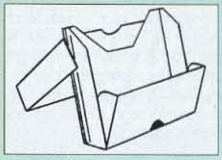


Gives double protection – Strong plastic case that affords real protection to your discs.
Antistatic helps avoid data corruption whilst in storage. The smoked top locks down.
Dividers and adhesive title strips are supplied for efficient filing of discs.

• **M35** – holds up to 50 5.25" discs	**£4.95**
• **M85** – holds up to 95 5.25" discs	**£6.95**
• **M25*** – holds up to 25 3.5" discs	**£4.95**
• **M50** – holds 50 3.5" discs	**£6.50**
• **M10** – holds 8 of No. 10 Data Cartridges	**£15**

* Not lockable

Plastic Library Cases



Holds up to 10 x 3.5" Discs.	**£1.50**
Holds up to 10 x 5.25" Discs.	**£2.00**

Dust Covers (For our Disc Drives)

Single CLS (without PSU)	**£3.20**
Single CS (with PSU)	**£3.25**
Twin CLD (without PSU)	**£3.85**
Twin CD (with PSU)	**£3.90**

Disc Albums

Attractively finished in black leather-look vinyl. Stores up to 20 discs. Each disc can be seen through the clear view pocket.

£4

Special Bulk Offer on Discs

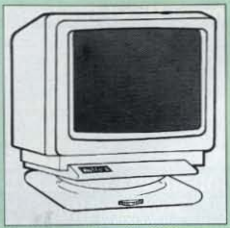
(Supplied packed in Anti-Static Lockable Storage Units)
(Lifetime warranty on Discs)

PRICES SLASHED

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£30	£35	£40
• With Sleeves 5.25"	£33	£38	£43
• 3.5" D/S D/D	£27 for 50		£49 for 100

Continued→ → → → → → → → →



Microvitec Monitors

• **1431** – Standard Resolution Monitor	£169
• **1451** – Medium Resolution Monitor	£209
• **Cub3000** Medium Res for A3000	£189
• **1441** – High Resolution Monitor	£359
• Dust Cover for Microvitecs	£5.50
• **Touchtec 501 Touch Screen**	£239

Now 3 years Parts & Labour warranty on all Microvitec Monitors

Multiscan Colour

• Eizo 9060S	£389	• NEC 6FG	£1525
• Eizo 9070S	£579	• Taxan 770LR	£362
• NEC 3FG	£370	• Taxan 775	£362
• NEC 4FG	£465	• Taxan 795	£402
• NEC 5FG	£850	• Taxan 875	£685
• VIDC Enhancer Board			£25

(P.S. Taxan 795 monitor is supplied with a FREE VIDC enhancer board)

Aries AlphaScan Monitor

Pound for Pound, the AlphaScan VGA Multiscan monitor provides the maximum performance and greatest flexlbility of any 14" colour monitor for the Archimedes micro.

Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The Multivideo VIDC Adaptor supplied (free) with the monitor allows high resolution operation in all screen modes.

£325

Philips Monitors

• **BM7502** 12" Hi-res Green Monitor	£67
• **BM7522** 12" Hi-res Amber Monitor	£67
• **CM8833** 14" Med. Res Colour Monitor	£165
• Dust Cover for Philips Monitors	£6

STAR BUY

- **PHILIPS 14" Medium Res**, dark glass, attractively finished Colour Monitor. A push-button switch toggles between Hi-Res monochrome green text mode and full colour display. (Please state the type of Connecting Lead you require).

ONLY £164

Refurbished Monitors

Philips 14" Refurbished Colour Monitors, same specification as the 'Star Buy' Monitors above £119
(Offer valid while stocks last)

Spare Monitor Leads

BNC Lead for Zenith or Philips	£3
Skart Monitor Lead	£5
RGB lead for TAXAN Monitors	£3
Archimedes Colour Monitor Lead	£7.50

Anti Glare VDU Screen

These extremely effective, easy to install, 12" & 14" VDU screens eliminate harmful glare, improves contrast on colour monitors. Increases productivity in offices. A must for wordprocessor users.

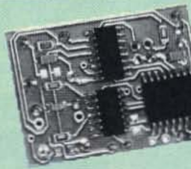
£12

Aries 2000 Colour Monitor

This attractively finished, etched screen medium res monitor is supplied complete with built-in speaker, volume control and video output. All controls are located on the front panel for ease of use. Ideal for BBC, BBC Master, Archimedes and Amiga.

A bargain at £159

Watford VIDC Enhancer



This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A WIMP application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

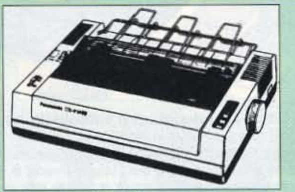
Super VGA VIDC Card: This provides support for both VGA and Multisync monitors. A unique electronic design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control

£45

MultiVideo VIDC Card: As above but for MultiScan monitors only.

£25

Panasonic Printers



• KX-P1123	£129	• KX-P1654	*£335
• KX-P1124i	£173	• KX-P1695	£272
• KX-P1170	£100	• KX-P2624	*£295
• KX-P1624	£272		

*** Price includes 12 months On-site warranty**

Cut Sheet Feeders

P36 – 1124/24i	£79	**P37** – 1123/70/80	£69
P38 – P1624/95; P2624			£129

Buffers

P12 4K Buffer Board for KX-P1081	£55
P14 32K Buffer P1123/24/70/80 P1540/92/95; P1624/54/95	£16

Serial Interfaces

P19 for P1123/24/24i/70/80/1624/54/95/2624 £49

Citizen Printers

• 120D Plus	£100	• Swift 9	£129
• 124D	£145	• Swift 24E#	£249
• 224	£185	• Swift 24X	£299
• PN-48	£209	• PN48 Ribbon	£4

# FREE Colour Option with Swift 24E

• Swift 24 Colour Option		£29
• Swift 24 Ribbons	Black £4	Colour £13
• Citizen/Archimedes Colour Printer Driver		£15

Integrex Colour Jet

• Colour Jet 132 Printer	£449
• Paper Roll	£6.50
• BBC Screen Dump Software	£10
• Colour Cartridge	£21
• Black Cartridge	£12.40
• 100 A4 OHP transparencies	£55
• 8K Serial Interface Optional	£123

Star Printers

• LC15	£173	• SJ48 Inkjet	£174
• LC20	£100	• XB24-200 Colour	£295
• LC24-10	£133	• XB24-250 Colour	£355
• LC24-15	£240	• XB24 Colour kit	£29
• LC24-200	£164	• ZA200 Colour	£234
• LC24-200 Colour	£203	• ZA250	£297
• LC200 Colour	£143		
• Star/Archimedes Colour Printer Driver			£15

Star Accessories

Cut Sheet Feeder

LC10/200/24-10	£65	LC15/LC24-15	£125
XB24-10	£80	XB24-15	£139

Serial Interfaces

8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £55

Paper Roll Holders

LC-200; LC24-200; LC24-200 colour £29

Buffers

32K Ram Card for LC/XB24-10; 15; LC200 £55

Ribbons

LC10; LC10-II; LC15	Black **£4;**	Colour **£6**
LC-200; LC24-200	Black **£5;**	Colour **£12**
XB24-10; XB24-15	Black **£5;**	Colour **£12**

Laser Printers

All Laser Printers include 12 months On-site maintenance

• Canon LBP-4+	4ppm	£575
• Canon LBP-8 III	8ppm	£970
• Canon LBP-8 IIIR	8ppm	£1440
• Canon LBP-8 IIIT	8ppm	£1340
• Epson EPL4100	6ppm	£620
• Epson EPL7500	6ppm	£1159
• HP Laserjet IIP+		£625
• HP Laserjet III	8ppm	£1015
• HP Laserjet IIID	8ppm	£1720
• HP Laserjet IIIP	4ppm	£695
• HP Laserjet IIIsi	16ppm	£2695
• Panasonic KX-P4420	8ppm*	£620
• Panasonic KX-P4450i*	11ppm*	£925
• Panasonic KX-4455 Postscript	11ppm*	£1450
• Panasonic KX-P4430 Satin Print		£999
• Star LP-8 III 2	8ppm	£1249
• Star LP-8 III	8ppm	£910
• Star LP-8 Star(post)script	8ppm	£1140
• Star LP-4	4ppm	£565
• Star LP-4PS Postscript	4ppm	£779

* Now with 2 years On-site warranty

Laser Toners

Canon 2, 3 & 4	£46	KX-P4420/50	£19
Epson GQ	£13	Laserjet HP IIP & IIIP	£42
EPL7100	£82	Laserjet II/D, III/D	£48
Star LP-8	£56	Qume Crystal (3)	£58

Laser RAM Upgrades

• IIP & III 1MB	£56	• EPL7100 256K	£39
• IIP & III 2MB	£88	• GQ5000 512K	£42
• II & IID 1MB	£64	• KX4420/50 1M	£75
• II & IID 2MB	£99	• KX4420/50 2M	£115
• II & IID 4MB	£146	• KX4420/50 4M	£195
• Canon LBP4 1M	£105	• Star LP8 1M	£139
• Canon LBP8 2M	£125	• Star LP8 2M	£275

Laser Drum & Developer

• Epson Drum	GQ5000	£93	EPL7100	£129
• Panasonic 4420 Drum		£60	Developer	£59
• Panasonic 4450 Drum		£93	Developer	£80
• Qume Drum		£76	Developer	£56

Jetpage Postscript Cartridge

• HP IIP/III	£229	IID & IIID	£235

Various Add-Ons

• Laserjet Appletalk Interface	£135
• HP Adobe Postscript	£399
• Pacific Page Postscript	£259
• HP Premier Font Collection	£28
• Jetfont Superset for II & IID	£127
• Laserjet various Font cartridges	from £45

Hewlett-Packard Printers

• # Desk Jet 500	**£275**	• Paintjet XL	**£1045**
• Desk Jet 500 Col.	**£475**	• Quiet Jet Plus	**£384**
• Desk Jet Cartridge	**£14**	• HP Think Jet	**£265**
• Paint Jet Colour	**£430**		

Now 3 years extended Parts & Labour warranty

• Paintjet Cartridges Black **£19;** Colour	**£25**
• Desk Jet 500 256K RAM cartridge	**£129**
• HP Epson FX Emulation Cartridge for Desk Jet	**£59**
• Desk Jet Unlimited (Book No VAT)	**£19.75**

Canon Bubblejet Printers

	Printer	CSF	D'ble Bin	Ink Cart
BJ10EX	£185	£43		£16
BJ300	£337	£88	£65	£12
BJ330	£380	£110	£79	£12
BJC800C	£1549			

• Spare Battery pack for BJ10E	**£33**

NEC Pinwriter Printers

• P20	**£180**	• P70	**£419**
• P30	**£240**	• P90	**£635**
• P60	**£335**		

• P60/70 Colour Option Kit	**£59**
• Ribbons Black for P20/30 **£6** for P60/70/90	**£7**
• Ribbons for P60/70/90 Black **£9** Colour	**£13.50**

Cut Sheet Feeders

P20 **£59;** P30 **£85;** P60 **£89;** P70/90 **£80**

Epson Printers

DFX5000	**£1079**	LQ1060 Colour	**£595**
DFX8000	**£1979**	LQ1070	**£315**
FX850	**£264**	LQ1170	**£437**
FX1050	**£336**	LQ2550+	**£675**
LQ200	**£162**	LX400	**£101**
LQ450	**£165**	LX850+	**£140**
LQ570	**£205**	LX1050	**£206**
LQ860 Colour	**£440**	SQ850	**£432**
LQ870	**£368**	SQ2550	**£625**

Cut Sheet Feeders for

LX400/800/850/LQ400/500/550	**£69**
EX800/FX800/850/LQ800/850	**£130**
FX/LQ 1000/1050/SQ850	**£159**
LQ 2550 **£390** SQ2550	**£390**

Tractor Feed for

LQ800 **£44;** LQ850/FX850 **£69;** LQ1050/FX1050 **£85;** LQ2500 **£90;** LQ2550 **£90.**

Accessories

• EX800/1000 Colour Option	**£45**
• EX800/1000 Colour Ribbon	**£14**
• LQ2500 Colour Option	**£65**
• Multifont Card for LQ550/850/1050	**£95**

Epson Printer Interfaces

All these interfaces fit inside the printer

RS232	**£28**	RS232 + 2K Buffer	**£52**

Printer Leads

BBC Centronics 4' long	**£5**
BBC Centronics 6' extra long	**£7**
Compact's Special Centronics Lead	**£7**
Nimbus Centronics Lead	**£6**
IBM/Archimedes Parallel Lead 6'	**£4**
IBM/Archimedes Parallel Lead 5 metres	**£10**
IBM/Archimedes Parallel Lead 10 metres	**£15**
Double Ended 36 way Centronics Lead 4'	**£7**
Double Ended 36 way Centronics Lead 6'	**£9**
MSX Centronics Parallel Lead 4'	**£12**
RS232 Leads (Various)	**P.O.A.**
IBM Keyboard extension lead coiled	**£5**

Concept Keyboards

Standard A3 Keyboard with BBC Software	**£143**
Standard A4 Keyboard with BBC Software	**£117**
Archi A3 Keyboard	**£144**
Archi A4 Keyboard	**£118**

Plotters

• HP7440A	**£415**	• HP7475A	**£592**

Roland Plotters

• DXY1100	**£495**	• DXY1200	**£625**
• DXY1300	**£825**	• DXY2500	**£2345**
• DXY3500	**£2955**	• Sketchmate	**£310**

• Roland plotter Pens, Fibre tip	**£7.50**

Listing Paper (Perforated)

• 1,000 Sheets 9.5" x 11" Fanfold Paper	**£7**
• 2,000 Sheets 9.5" x 11" Fanfold Paper	**£11**
• 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold	**£21**
• 1,000 Sheets 15" x 11" Fanfold Paper	**£9**
• 2,000 Sheets 15" x 11" Fanfold Paper	**£16**
• 1,000 Sheets true A4 Fanfold Paper 70gms	**£11**
• 2,000 Sheets true A4 Fanfold Paper 70gms	**£21**
• Teleprinter Roll (Econo paper)	**£4**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	**£6.00**
1,000 90 x 36mm (Twin Row)	**£6.25**
1,000 90 x 49mm (Twin Row)	**£7.50**
1,000 102 x 36mm (Twin Row)	**£6.75**

Laser Printer Labels on A4 Sheets

3750 70 x 29mm (3 Rows)	**£13.50**
3000 70 x 37mm (3 Rows)	**£13.25**
2625 70 x 42mm (3 Rows)	**£13.00**

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC Micro	–	£3.50
BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£2.75	£4.50
DMP2000	£2.75	£4.75
DMP4000	£3.75	£4.85.
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£4.00	–
LX80/86/800/850	£2.75	£4.50
LX400	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic KX1080/81	£3.25	£4.75
Panasonic KX-P1124	£7.00	£5.00
Star LC24-10	£2.95	£6.00
Olivetti Ink Jet Cartridges (set of 4)	£6	

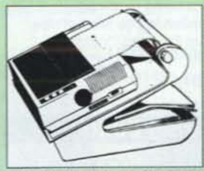
Original Panasonic Ribbons

Guaranteed to last 3 million characters

P110 for KX-P1081, 1592 & 1595	**£6**		
P115 for KX-P1180	**£7**	**P145** for KX-P1124	**£7**
P140 for KX-P1540	**£8**	**P155** for KX-P1624	**£8**

Colour Ribbons for KX-P1081, 1592 & 1595
Brown, Blue or Red **£9 each**

Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)
132 Column version £29(carr. £4)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Type

Connects	Serial	Parallel
• 2 to 1	£10	£11
• 3 to 1	£13	£14
• 4 to 1	£16	£17

Professional Type

Connects	Serial	Parallel
• 2 to 1	£17	£18
• 3 to 1	£22	£25
• 5 to 1	£34	£38

Cables extra at £6 each

2 Way Compact Printer Switch

A handy 2 way printer switch can be attached to the micro or monitor for ease of use.

• Centronics **£18;** • Serial **£17**

(Cables extra at £6 each)

Auto Printer Sharer Switch

Connects	Serial	Parallel
2 to 1	£40	£45
4 to 1	£62	£49
8 to 1	–	£89

256k Multi Spooler

These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

• 2 In/2 out	**£135**	• 4 In/2 out	**£169**
• 8 In/1 out	**£199**		

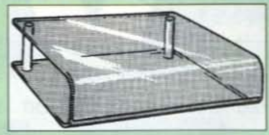
Compact Converter Units

Serial to Parallel	**£36**	Parallel to Serial	**£37**

Laser Direct

• Laser Direct Qume 6ppm complete	**£769**
• Special High Res Card 600 DPI for Canon LPB 4 & LPB 8 Laser Printers	**£325**
• LPB 4 Printer plus High Res Card	**£899**
• LPB 8III Printer plus High Res Card	**£1299**

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version	**£16** (carr £3)
136 Column version	**£20** (carr £4)

Continued→ → → → → → → → →

QUEST MOUSE Mk III

• Quest Mouse III & Quest Paint	£59
• Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont	£89
• Quest Mouse III only	£30
• Quest Paint Software only	£34
• Quest Font Disc (22 Text Fonts)	£15
• Quest Mouse Mat (Red or Blue or Green please specify)	£3
• Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer	£18

(P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

ConQuest

Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

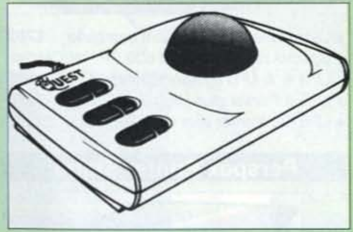
ConQuest ROM Package £30
(Price includes software in ROM and a comprehensive Manual).
(Not Compatible with BBC Compact)

ARCHI Mk II MOUSE

An extremely reliable replacement mouse for Archimedes Micro £32

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version	£25
QT-20 Archimedes Version	£26

RB2 Marconi TRACKER BALL

RB2 (AMX/Quest compatible)	£36
RB2 including Quest Paint	£69
RB2-A for Archimedes	£37

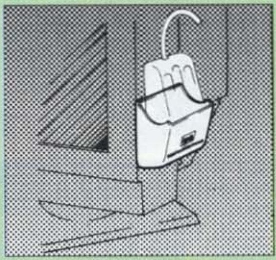
THE NEW Mk III AMX MOUSE

• AMX Mouse plus Super Art £54

(Please specify for BBC, Master or Compact)

• AMX MOUSE ONLY	£29
• AMX SUPERART Package	£29
• AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse	£25
• PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker	£13
• AMX DESIGN (ROM)	£34
• AMX XAM Educational	£15
• AMX EXTRA EXTRA	£16
• AMX MAX A gem of desktop (ROM)	£20
• MOUSE MAT	£3

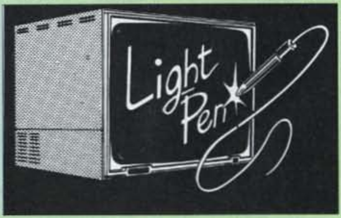
WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive or desk.

It protects it from damage when not in use, yet within easy reach when you need it again. At £4 it does not cost a rodent's ransom.

Price £3



Our Mark II Light Pen is the very latest in light pen technology. It is totally insensitive to local lighting conditions and works with many different monitors. The pen only responds to the High Frequency light produced by your monitor/TV. An LED indicates when valid video data is being produced. A conveniently located switch is also fitted. (Price includes FREE software Disc and Operating Manual)

Only £19

Fleet Street Editor

Software pack for BBC Compact	£22
Fonts N Graphics Disc Utility	£13
XTRA Admin	£12
Walt Disney	£12

BEEB VIDEO DIGITISER

"Test Bureau Approved for Use in Education"

Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro. This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket. The software supplied includes a sophisticated, fast screen dump routine.

Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem. The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

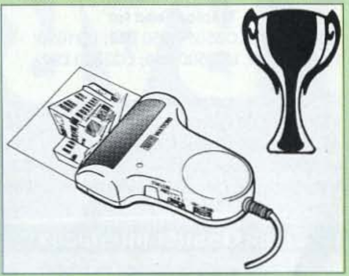
£99

(BBC B+ and Master compatible, except Master with Econet)

(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual)

Beeb Hand Scanner

Hand-held Scanner for the BBC Micro



Watford Electronics are pleased to announce the launch of the first hand held scanner for the BBC Micro. HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs! These useful devices have been available for faster and more expensive micros for some time, but only now is Watford Electronics able to offer the BBC Micro computer.

The HandScan plugs directly into the 1MHz bus on the BBC while a comprehensive set of utilities provided by the sophisticated ROM firmware. The scanner has a resolution of either 100 DPI or 200 DPI when accuracy is essential. Pictures as wide as 4" may be scanned in mode 0 and various types of dithering may be selected to simulate the grey levels of a scanned picture.

All necessary software has been included in the firmware to allow the scanner to read images directly into our Wapping Editor with little more than the click of the mouse. The digitised picture may then be incorporated into your magazine, newsletter, report or any other document.

Beeb HandScan & Firmware	£125

WAPPING EDITOR
"MIGHTIER THAN THE QUILL"

Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Included with the system is a utility disc containing several high quality fonts, various utilities and a ROM image of a Support ROM. A comprehensive 100 page manual completes the package. The Support ROM contains routines to allow an area to be rotated to any angle or distorted to any four-sided shape. Also included are facilities to draw ellipses at any angle and sectors, segments and arcs (in Master or BBC B with Acorn GXR). Another of the features of the Support ROM is a 'Turbo DFS' which gives DFS access times comparable with those of ADFS.

Page Layout Section

The Wapping Editor may be used to create pages of any size from an A6 to a full A3 page. If none of the eight default page types suit your purpose, the stand-alone page creation program may be used to create pages to your own requirements. By using proportionally spaced fonts and genuine microspacing it is possible to print over 150 characters across an A4 page. A unique feature of the Wapping Editor is the 'A5 x 2' page size allowing two A5 pages to be printed side by side onto a single A4 sheet.

The graphics module incorporates the facilities like: pencil, brush, airbrush, polygon, circle, eclipse, fill, cut & paste, etc.

Text may be typeset, either justified or unjustified, in any font anywhere on the page. Simply select which font and text document you wish to use, and pull out a rectangle on the page where you want the text to be – it's as simple as that! Multiple columns may be printed just as easily and a special 'expand' feature may be used to expand the microspacing so that the document exactly fits the space defined.

Word-Processor

The integral word processor is the ideal tool for producing your text documents, although text can of course be read in from any of the other popular word processors such as View, Wordwise etc.

The Font Editor

The font editor module will allow you to design your own typefaces or to modify the ones provided on the utility disc. This sophisticated editor has numerous functions designed to take the tedium and frustration out of producing good looking, well balanced fonts. Each character may be individually proportionally spaced and characters of any size up to 16 x 16 pixels may be defined.

Pictures may also be 'grabbed' from a video source by using the Watford BEEB Video Digitiser.

Wapping Editor Software Pack	**£59**
Wapping Editor plus Mouse	**£79**

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc. Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out.

Music writing symbols in the form of pattern and brush for quick production of manuscripts are included together with staves.

There are two prepared hi-res pages layed out for printing labels, both single and double width. Ready made label designs are included but these can be easily replaced with your own designs.

A Mode 0 screen dump routine is also included. To pack such a large amount of data onto the discs the screens have been compressed and routines to compress and expand Mode 0 screens are included on both discs. Using the packing routine you can archive large numbers of screens onto a single disc.

£15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.

Also included are three Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.

Supplied complete with instructions. **£12**

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). **£13**

Archi A4 Scanner

This most advanced Archi A4 image scanner is supplied complete with ROM based podule software. Features provided include facilities for zooming in on an image and inverting the image in X and Y directions, saving and printing of the sprite created. Interactive help is supplied using the !HELP application on the Acorn applications discs.

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.

Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.

Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

All these features and facilities combine to make the Archi Page Scanner the fast and convenient way in which to add that extra impact, interest and clarity to documents, reports, instruction sheets, manuals, news letters, etc., from your Archimedes DTP package.

New Low Prices:

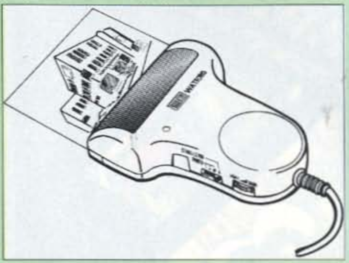
Archi A4 Scanner	£349
Sheet Feeder for above	£95
Scanner + Sheet Feeder	£419

(Dealers Inquiry welcome)

Computer Concept Scanlight

• Scan-Light A4	£375
• Scan-Light A4 + Sheet Feeder	£475
• Scan-Light Junior mono	£178
• Scan-Light Junior 256	£215

Archi Mk II Hand Scanner



Watford Electronics is now able to offer a complete hand held scanning package, possibly the most essential addition to any desk top publishing system, for only £149. The package includes the most comprehensive utility software available for the Archimedes, a high quality hand held scanner, and all necessary documentation to get you going straight away.

SCANNER

The scanner is capable of scanning up to an amazing 400 dots per inch (DPI)! The scanning area is 4" wide, and the height is only limited by the maximum amount of memory available. The dot resolution may be switched to 100, 200, 300 or the maximum 400 dpi. One of four operating modes may be selected offering either pure monochrome scanning, or one of three grey level modes. The grey level modes use different size dither patterns to represent up to 16 shades of grey. There is also a dial to allow the "brightness" to be adjusted over a wide range, in order to optimise the quality for any specific image. The scanner interface is a standard, single width, expansion card (podule) which plugs into the Archimedes' backplane. The socket on the rear panel connects the scanner by 1.8 metres of cable.

SCANNER SOFTWARE

Full use is made of the windowing and the multi-tasking facilities of RiscOS. The software is supplied in a 64Kbyte ROM located on the interface board. The scanner appears as a small icon on the desktop icon bar, and the software is retrieved from the ROM simply by clicking on that icon. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. The other facilities included in the software are.

Cropping and scaling to any size including stretching and squashing in X and Y direction separately.

Colour tinting.

X and Y flip.

Edge detection which turns solid objects into outlines.

Selective directional copying which allows features (i.e. lines or text) to be made thicker or thinner.

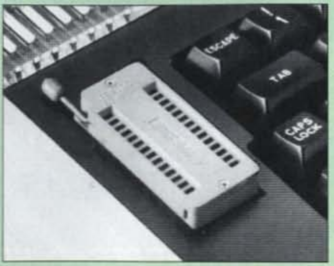
Scanned images may be saved as sprite files or transferred directly into other RiscOS applications (DTP, Draw, Paint) simply by dragging the sprite file into the application's window. Sprites may also be generated using anti-aliasing. This greatly improves picture quality and is particularly effective when scanning material with a range of grey tones, such as photographs. Images can be printed on any printer that is supported by a RiscOS printer driver, with optional settings for portrait or landscape modes, image scale and positioning. Images are printed using the full resolution of the printer and are not limited to the screen resolution.

On-screen help is provided via the RiscOS interactive help facility. Calls are also provided in the ROM for users wishing to write their own software, incorporating the use of the scanner.

AHS-4 Archi 300/400 Version	**£149**
AHS-3 Archi A3000 Version	**£169**

Continued→ → → → → → → → →

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without opening the lid. The ZERO INSERTION FORCE (ZIF) socket is located into the ROM Cartridge's position.

- Very simple to install. NO SOLDERING required. The ZIF (Zero Insertion Force) eliminates the possibility of damage to your ROM pins when inserting & extracting.
- The low profile of the socket allows unrestricted access to the Keyboard.
- All data and address lines are correctly terminated to ensure correct operation of suitable ROMs with the BBC micro. We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.
- This versatile hardware solves the problem of running out of socket space. Simply lift the ROM from the ZIF & insert a different one (No pulling or pushing of Cartridges. It is a must for professionals and Hobbyists alike.)
- BBC, B and B+ compatible.

ONLY **£18**

BBC B Low Profile Cartridge System

Complete System consists of: Low profile ROM Cartridge, Socket housing, Cable assembly, 5 labels and a library storage rack for the BBC B.

• Complete System	£11
• Spare Cartridges	£2.75
• Spare Rack	£1.65

ROM Cartridges for the BBC Master

Will also accept the new larger Piggy Back ROMs like: Interword, Interbase, Quest, Conquest, etc

Twin **£8;** Quad **£13**

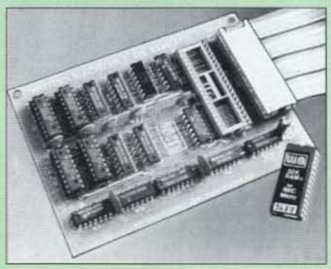
User Port Splitter Unit

User PortSplitter
A
B

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination

Excellent Value at **£22**

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- While word processing, you don't wait for a slow printer, type in text while printing and save on expensive printer buffers.
- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.
- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20k of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28k of program space.
- Use the full 32k or the bottom 12K of the expansion RAM as a printer Buffer. (P.S. Only 12K printer buffer can be used with Wordwise & WW+, due to the way they are written).
- Unique facility to turn ROMs off and on again.

Only £54

(Price includes a comprehensive manual and the ROM)

NEW

Commander Joystick

Watford Electronics' new Commander Joystick for the BBC B and Master 128K has a unique dual mode of operation giving selective free floating or self centring fully variable control in both X and Y axis directions. Commander is particularly good for flight simulation and drawing programs.

Features:

- Direct connection to BBC Analogue input port – no interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Price: £15

ARIES CORNER

B-32 Shadow RAM Card

Like the BBC B+, the B32 provides 20k of shadow screen RAM and 12k of sideways RAM. Unlike the B+, the B32 has simple software commands which allow the user to reconfigure the RAM as 16k of shadow RAM and 16k of sideways RAM, or all 32k as sideways RAM.

With the B32, the programmer gets up to 28k of RAM available for Basic, Logo, Cobal, Forth, Lisp and BCPL programs in any screen mode. The business user gets extra memory for View, ViewSheet, Wordwise Plus, Interword and many other applications. For advanced applications, the scientific user gets access to a massive 47k of data storage using the Acorn approved ★FX call.

Sideways RAM enables you to load sideways ROM images from disc, allowing you to have a large library of sideways ROMs (subject to the copyright holder's permission) stored on disc. The B32's sideways RAM can also be used to extend any operating system buffer (such as the printer buffer) or to load tape programs into a disc system.

The B32 simply plugs into the 6502 processor socket on you BBC micro – no flying leads to connect and no soldering. Provision of the onboard ROM socket means that the Aries-B32 control ROM does not use up one of your existing ROM sockets.

- Recommended by Computer Concepts for use with their Inter series of ROMs.

Price: **£59**

Aries B-12 Sideways ROM Board

The B-12 provides a total of twelve sideways ROM sockets (the four in the original machine are replaced by the twelve on the board), all fully accessible by the MOS sideways ROM system. In addition, there are two sockets for sideways RAM, giving up to 16k of RAM using 6264 static RAM chips.

If you do not have a B32 or B20, a small adaptor module (the Aries-B12C) is available at a nominal cost

Price:	Aries B-12	£36
	Aries B-12C	£5

Aries B-488 IEEE-488 Interface Unit

The Aries-B488 is an interface unit to enable the BBC micro to control and monitor IEEE-488 bus systems. The IEEE-488 bus (also known as the 'GPIB or 'HP IB') is the standard method of interconnecting programmable laboratory instruments and control equipment. Using the B488, up to 15 devices may be connected in a single high-speed data network.

£238

Voltmace Joysticks

Delta 3B Single Joystick	£10
Delta 3B Twin Joysticks	£15
Delta 3C Joystick for Compact	£10
Delta 14B Single Joystick	£11
Delta 14B/1 Adaptor Module	£12
Transfer Software Disc-Tape	£7
Delta-Cat A mouse eliminator Joystick for the Archimedes	£24

Delta Base B

Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128 £25

ROM/RAM Card

Watford Electronics announced the first ever commercial ROM board for the BBC micro, the Watford Electronics 13 ROM Socket Board 9 years ago. Following the success of this board, we have designed what probably represents the ultimate in expansion boards, Watford's ROM/RAM card.

- NO SOLDERING required to fit the board.
- NO User Port corruption (avoids problems with the mouse, modems, Eprom Programmers, etc.)
- Fully buffered for peace of mind.
- Compatible with BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM (ALLEVIATES crashes during ROM development).
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- FREE utilities disc packed with software.
- Compatible with our DDFS board, 32k RAM Card, Delta Card, sideways ZIF, etc.
- Large printer buffer.
- UNIQUE fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROMSPELL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

The ROM-RAM Board plugs into the 6502 CPU socket. This leaves free all the existing ROM sockets, which can still be used normally.

Any ROM that can be plugged into the BBC micro's own ROM sockets may be used in the ROM-RAM Board.

The ROM-RAM Board is supplied with all ordered options fitted as standard. Upgrade kits (with full instructions) are available for all of the options, for later.

PRICES:

- ROM/RAM card with 32k DRAM **£45**
- ROM/RAM card with 64k DRAM **£59**
- ROM/RAM card with a massive 128k DRAM **£99**

OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit £8
- 16k DRAM for Upgrade £13
- Battery backup £3
- Read and Write protect switches £2 each

Complete ROM-RAM card with all options fitted £109

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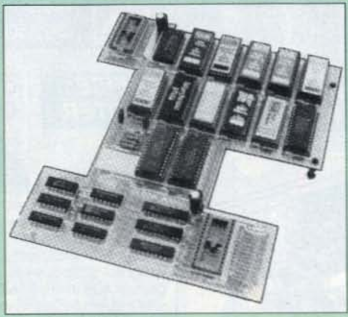
Ansaphone Hot Lines
(0923) 250234 or 233383

Solderless Sideways ROM Socket Board



The key features of this no fuss, easy to install card are:

- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Very low power consumption.
- Compatible with Torch, DDFS, RAM Card, 2nd Processor, etc.
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish") allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £35
Battery Backup fitted **£39**
Battery Backup only **£3**
16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer. **Only: £8**

BBC Educational Software

- Maths with a Story 1 (Disc). 4 primary level maths programs £20.00
- Maths with a Story 2 (Disc). 4 further maths programs. £20.00
- Picture Craft (Disc) 6-14 age group. Pack consists of flexible geometrical design & colouring programs. £17.00
- ECOLOGY O-Level program. £20.00
- POLYMERS O-Level program. £20.00
- Classification & Periodic Table O-Level. The suite is supplied with its own database of chemical elements which can be classified according to your own rule. £20.00
- ADVANCED TELETEXT SYSTEM £8.65
- PERIOD TABLE SOFTWARE £20.00
- Computers at Work – Primary £17.35
- Electric Fields 6-14 years £11.25
- Espana Viva – 3 Discs £19.95
- WHITE KNIGHT Chess game £16.00
- A Vous La France £29.00
- **FUN SCHOOL 2 – Red:** Under 6 yrs £12.00
- **FUN SCHOOL 2 – Green:** 6-8 yrs £12.25
- **FUN SCHOOL 2 – Blue:** 8 yrs+ . £12.50
- **FUN SCHOOL 3 – Red** £18.50
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- Boulogne and Oh-Les – 2 programs for beginners £26
- Letters to French Penpals – 11 years+ £26
- French Programs with Henri Beret – The programs in this series present vocabulary, grammar and role-play phrases in the form of animated games. 11-16 £22
- Six German Games – Aimed at pupils in their first year, but useful as revision for more advanced student of German. 12 years+ £22
- More German Games – Aimed at pupils in their 2nd year of learning German. 12 years+ £22
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- Help Your Child learn Basic Map work No. 2 (9-14 years) £18
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- Spelling Week by Week (6-14 years) £18

Archimedes Software

- Animated Alphabet (3-6 yrs) £21
- Arcventure (8-12 yrs) £29
- Bookbinder £43
- Bumper Disc £14
- Bumper Disc 2 £14
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- Craftshop 2 £26
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Computer Concept's ROMS

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Inter WORD	£36
Mega-3 ROM	£76
Spell Master	£42
Wordwise	£24

Wordwise plus

£40

We are giving away absolutely **FREE**, the superb Word-Aid ROM worth £24, with every WORDWISE PLUS package bought from us.

Word-Aid

The most comprehensive utilities ROM for Wordwise-Plus

Extend the power of your Wordwise Plus word processor with this most advanced ROM from Watford. By utilising the powerful Wordwise Plus programming language, WordAid provides a whole host of extra features, all accessed via a special new menu option. This ROM has been personally approved by Mr Charles Moir, the author of WORDWISE PLUS.

- Alphabetical sorting of names and addresses.
- Text transfer options.
- Chapter marker.
- Epson printer codes function key option.
- Search and display in preview mode.
- Embedded command removal.
- Print Multiple copies of a document.
- Multiple file options for print and preview.
- Address finder.
- Label printer.
- Mail-merger.
- Number/delete/renumber.
- Clear test-segment area.
- BBC B, B+ and Master compatible.

Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

View 3.0 ROM	£45
Viewsheet (Acornsoft)	£36
Viewstore	£36
Viewspell with 80 track disc	£25
Viewplot Disc	£20
(Please specify for Master 128 or Compact)	
View-Index	£12
Overview packs 1 & 2	£65
Hi-View	£38

MINI OFFICE II

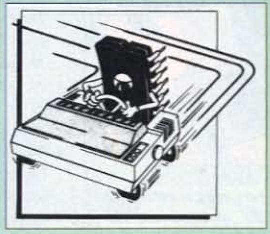
DISC Version for BBC B & B+	£14.00
DISC Version for BBC Master	£16.00
DISC Version for the Compact	£18.00

(When ordering please specify for which Micro & 40 or 80 track Disc)

View Printer Driver Discs

Epson FX & RX 80	£10
Juki & Brother HR	£10

View Printer Driver ROM



View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

The VPD extends View's printer command with a series of mnemonic commands. All standard highlight sequences are also supported. A large range of printers are supported by drivers contained within the ROM (the drivers can be downloaded and customised). Printers supported include: Epson's MX, RX, FX, LX, JX80 range, HI80, KP810/910, PW1080, JP101, HR15, M1009, GLP, Panasonic KX-P1081/2, JUKI 6100, etc.

Other printers are readily supported by defining a Printer Driver using the built-in Printer Driver Generator. The features mentioned below are available to both the built in Printer Drivers and user defined drivers (assuming the printer supports the features).

NLQ control, Underline, Bold, Proportional Spacing, Microspacing, Italic, Superscript, Subscript, Condensed, Enlarged, Double Strike, Set lines per inch numerically (e.g. LPI 6), Set characters per inch numerically (e.g. CPI 5), Select printer font, Select printer ribbon colour, Translation sequences, Emulation of BBC Character Set, Simple numeric expressions for certain operations, Full printer setup, Send control codes, Print prompt on screen, Redifinable Pad character, Pause for key press, Prompt to change daisywheel, and Execute ★ command when printing.

Other features include a very powerful on-screen preview, with bold, italic, underline, super/subscript, enlarged highlights, and a special printer driver to allow memory-based text to be previewed by View 1.4. Of course, View 1.4, 2.1 and 3.0 are all supported, as is Shadow RAM and 6502 Second Processors. The BBC B series and Master series of micros are supported. A comprehensive manual is supplied. All in all, a very professional product for the discerning user who wants power at their finger tips.

Price: Only £29

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OFFICE MASTER

CentreSoft
Office Master

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STOCK CONTROL – Allows you to enter stock received, stock out, summary of stock items and current holdings together with details of total cost, total stock to minimum level, units in stock ordering, quantity and supplier detail.

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CentreSoft
Office Mate

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- ● BEEBCALC SPREADSHEET
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DATABASE – Set up a computerised card index system with powerful search facilities.

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Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

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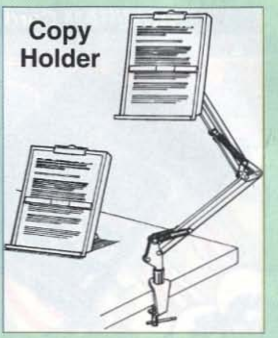

Whether you want to type in your latest program or the draft of a new trilogy, Watford's manuscript holders are superb for holding your paper at the ideal height and angle to allow you to read and type in ease and comfort.

Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip. (for resting books or magazines, the desk top version is recommended).

Desk Top **£8** (carr. £3)
Angle poise **£12** (carr. £3)

The Epson RX/FX/KAGA Printer Commands Revealed Handbook

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out? Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON FX-KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English, how to use and make the most of your KP810, PW1080A or any other Epson FX80 compatible printers like Panasonic KX-P1080/1, etc., with the BBC Micro, both from Basic and Wordwise.

It describes in detail how to obtain the maximum in graphics capability from your printer and includes full indexes allowing you to cross index the numerous commands. Every command is explained in detail, with an accompanying BBC Basic program and an example of its use from Wordwise.

£5.95 (No VAT)

ALL PRICES EXCLUDE VAT

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New Release

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Stop the Confusion!

Do you have to use both Acorn computers and PC's? Would you like to use your Archimedes or A3000 in PC-emulation mode but are unsure of the new commands?

Although Acorn machines (such as the BBC B, the Master, the Archimedes and the BBC A3000) are mainly used in education, most commercial computers use other operating systems, particularly MS-DOS. As a result school computer users are at a disadvantage when moving into 'business' computing. PCs and other commercial computers use MS-DOS as the operating system, so commands for formatting, copying, backing up, printing and the modem are not the same. Even file names are written differently! And did you know that there is one Acorn command which, if used in MS-DOS, wipes everything in the current directory?

'ACORN TO PC' enables you to change over painlessly. It shows clearly and quicly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way – from Acorn to MS-DOS, or from MS-DOS to Acorn.

'ACORN TO PC' also acts as a handy reference guide to all Acorn star commands and their MS-DOS equivalents. It also has an extensive and readable explanation of the directory tree and hierarchical filing systems in general. Both DFS and ADFS Acorn systems are covered.

'ACORN TO PC' is written clearly and concisely by Dr. John Lockley, who has wide experience of writing and broadcasting. He is currently appearing as a regular contributor on Radio 5, and is co-author of 'The Complete BBC Computer User Handbook'.

Price: £12.95 (No VAT)

The Complete BBC Computer User Handbook

If you own a BBC B, B+, Electron, Master 128 or Master Compact, or Archimedes, then this is the book for you. It shows how to get the best from your machine, and how to make it work for you. The general style and level of presentation means that both the expert and beginner alike will feel comfortable with the quality and quantity of the material.

Subjects covered include the general use of computers, hardware design and peripheral devices like printers, disc drives, etc, and Networking. Programming hints and tips and various disciplines for making a better program are discussed in some detail, including debugging of specific errors. Standard programs are covered, such as wordprocessors, spreadsheets, databases, graphics, communications, etc., which brings you neatly on to the subject of using computers in the office or at work – even giving advice on writing and marketing your own programs.

A book you will enjoy to use as a reference, or read from cover to cover, over and over.

Only: **£14.95** (No VAT)

The Complete Mouse User Guide to BBC Micro

This manual has been written to reveal the secrets of the mouse. It explains all the principles required by the hardware and associated software, and also example listings for inclusion into custom programs. The manual first details the basic principles of the mouse and a simple program which uses these principles. This information should be adequate for most applications. However, it is possible to improve the performance of the mouse by expanding on the principles already used in the software. This is again fully explained and an example program given.

It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included. These may be typed directly into the micro, without the need for any understanding of the hardware or software involved, enabling the mouse to be used for custom applications.

Price £5.95 (No VAT)

Example programs on Disc £4.95

Beeb PC (BASIC)

Beeb PC Basic is designed for program authors wishing to convert programs so that they will run on IBM personal computers. To convert BBC BASIC programs manually can waste days of valuable time with every occurrence of common statements such as PROC, DEFPROC, TAB, having to be changed.

Beeb PC (BASIC) automates many of these changes, and will convert majority of BBC statements that are invalid for IBM BASIC into equivalent acceptable statements. In addition BBC BASIC data files can be converted to IBM BASIC format, with support provided for all BBC data formats:- INTEGER, REAL & STRING.

Price: £38

Beeb DOS 3.0

(Now reads Archimedes Discs)

The BBC and IBM PC's are the most popular micros in the UK. The BBC is firmly established in the education sector and the IBM is the industry standard in the business world. The pools of information and applications held on these computers are immense, yet the means of passing information between them are very limited. Beeb DOS provides a practical method of transferring information between these two micros.

Beeb DOS is a collection of utilities which run on the PC's and enable it to read and write information on BBC discs. You can transfer files between your PC's 360K floppy, high density floppy or hard disc and your BBC discs. In addition Beeb DOS allows you to catalogue, format and compact BBC discs and delete, re-name, lock and unlock BBC files, all on PC's. Each Beeb DOS utility is written in IBM assembler and is run directly from PC or MS-DOS. The Beeb DOS utility can be run from floppy disc, hard disc or RAM drive.

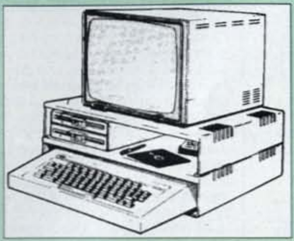
Beeb DOS is supplied on an IBM 5.25", 360K disc complete with a comprehensive operating manual. (Will only work on 360K Disk Drives & read only ADFS and Watford DDFS – not DFS).

Price: £39

(Please write in for technical literature)

Continued→ → → → → →

Plinths for the BBC B & Master 128K Micros

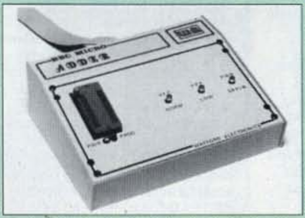


Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationery. The computer slides neatly in the lower section allowing easy access to remove the lid. Colour: Matching BBC Beige.

Single BBC Plinth	420 x 310 x 105mm	**£13**
Double BBC Plinth	420 x 310 x 210mm	**£24**
Single Master Plinth	490 x 310 x 105mm	**£14**
Double Master Plinth	490 x 310 x 210mm	**£26**

(Carr. Single plinth £2; double plinth £3)

ADDER



The Adder unit connects to the User Port and draws its power from there too. The EPROM is mounted in a top quality ZIF socket. There are no switches or controls as Adder is entirely software controlled.

Features:

- Two ultra fast programming algorithms or standard slow algorithm.
- Supports standard 21V programming and newer 12.5 volt EPROMs. (Software switched).
- The RAM image to be programmed can be built up in many ways. Sections of image can be loaded separately. Part programming. Read EPROM. Edit data in memory.
- Automatic processing to handle a list of files to program into the EPROM.
- Automatic disc buffering to allow programming of 32K 27256 devices from a 32K file without extra effort.
- Verification gives detailed error list and checksums are maintained. There is also a blank check facility.
- Works with all standard filing systems. Generates header code for RFS ROMs to allow Basic programs etc. to be stored in EPROM. More than one file per ROM permitted.
- Programs the following EPROMs: 2516, 2716, 2532, 2732, 2764, 27128, & 27256.

£55 (£5 Carr)

TEX EPROM ERASERS

EPROMs need careful treatment if they are to survive their expected lifetime. Over erasure of EPROMs very rapidly turns them into ROMs! The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER EB** – Standard version erases up to 16 chips. **£34**
- **ERASER GT** – Deluxe version erases up to 18 chips. Has automatic safety cut-off to switch off the UV lamp when opened. **£36**
- Spare UV tubes. **£12**

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Servisol Foam Cleaner

This king size multipurpose foam cleaner spray is ideal for cleaning Keyboard, Monitor, Disc Drive & Computer furniture surfaces.

£2.50

Antistatic Aerosol Spray

Ideal for cleaning and preventing static build-up on TV/Monitor Screens.

£2.50

Aerosol Dust Spray

Ideal for removing dust & dirt from Keyboard & similar inaccessible spaces. **£3**

Spares for BBC Micro

UHF Modulator	**£4**	16MHz Crystal	**£2**
Speaker Grill	**£1**	17.734 MHz Xtal	**£2**
Speaker	**£3**	32.768MHz Xtal	**£1**
Keyswitch	**£1.50**	BBC B Refurbish	
Master PSU	**£59**	Casing	**£25**
Master Keyboard	**£62**	Keyboard	**£46**
Master Casing	**£49**	Power Supply	**£59**

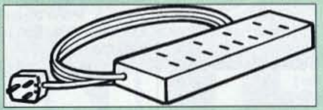
Replacement Flexible 17 way Keyboard Connector **£4**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightening or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket



4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals.

£9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

£16

ROM Extraction Tool

This extremely useful tool allows you trouble free chip insertion and removal from your computer by distributing the removal force over the whole body of any 24 or 28 pin chip. **£2**

Metal Chip Extractor **£3**

28pin DIL Header Plug

SOLDER type **£1.50** IDC CRIMP type **£1.95**

8 Way DIP Switch

Increase the speed of your Disc Drives by soldering this switch to your BBC B or B+ keyboard

Only **£1.00**

---

28 pin ZIF SOCKET (Textool) **£6.95**

Connecting Leads

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug	
to 3 pin DIN Plug + 1 Jack Plug	**£2.50**
to 7 pin DIN Plug	**£3.00**
to 3 Jack Plugs	**£2.50**
6 pin DIN to 6 pin DIN Plug (RGB)	**£3.00**

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00;** Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	**50p**	**75p**
RS423 (5 pin Domino)	**70p**	**80p**
Cassette (7 pin DIN)	**40p**	**95p**
ECONET (5 pin DIN)	**35p**	**50p**
Paddles (15 pin 'D')	**150p**	**250p**
Disc Drive Plug 4 way	**100p**	–
6 way Power Connector	**120p**	**150p**

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

£14

Watford POWER DUCK **£8**

CHIP SHOP

1 MB-10 DIL D-RAM	**£4.50**
1 MB ZIP D-RAM	**£4.90**
256K x 4-8 DIP	**£4.75**
256K x 4-8 ZIP	**£4.80**
DS3691	**£4.50**
DS88LS120	**£5.25**
LM324	**£0.45**
SN76489	**£5.50**
SAA5050	**£8.75**
UPD7002	**£6.00**
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27128A-250nS (12V5)	**£2.50**
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27512-2	**£4.50**
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4013	**75p**
4020	**£1.00**
4164-10	**£1.55**
4464-10	**£3.50**
4816 RAM	**£2.00**
41256-8	**£2.00**
41256-10	**£1.50**
6264LP-8K	**£4.00**
6502A CPU	**£5.00**
65C02 3M	**£9.75**
65C12	**£9.00**
6512A	**£10.00**
6522	**£4.00**
6522A	**£5.00**
62256ALS-15	**£10.00**
62256P-12	**£8.50**
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68B50	**£2.95**
68B54	**£7.50**
7438	**50p**
74LS00	**50p**
74LS04	**50p**
74LS10	**50p**
74LS123	**£1.00**
74LS163	**£1.00**
74LS244	**£1.00**
74LS245	**£1.00**
74ALS245	**£2.75**
74LS373	**£1.00**
74LS393	**£1.00**
75453	**£1.00**
75159	**£3.00**
9637	**£2.00**
ICL7673PA	**£3.00**

Assorted ROMS

ACORN ADFS	**£25**
ACORN BASIC 2 plus User Guide	**£22**
Acorn BCPL	**£42**
ACORN DNFS	**£17**
Acorn FORTH	**£32**
Acorn Graphics	**£25**
Acornsoft C Disc	**£36**
Acorn LISP	**£19**
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Acorn OS 1.2	**£14**
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Video ULA	**£14**
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Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's NEW Innovative IDE interface card brings the latest advances in PC hard disc technology to within reach of the Archimedes user.
Because of the integration of the controller and drive electronics onto one compact board, Watford Electronics have been able to include extra features into the drive, such as Caching, where tracks are buffered in fast memory, reducing access times and increasing throughput. All these benefits make IDE drives far more attractive than conventional ST506 drives or SCSI.
Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.
Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine. An optional 20Mb or 40Mb hard disc can be supplied on the podule expansion card itself, with its fast transfer rate and power saving modes the drive is ideal for storing commonly used software such as the !Fonts application.
A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.
By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Built in Non Volatile RAM to hold configuration
- LED activity indicator
- 37 way D type socket for external drives
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

*Commands

*IDELock
*IDEUnlock
! DEFS
Selects the IDE filing system 'IDEFS'.
*IDEDrives
Displays the configuration and native characteristics of installed drives.
*Configure IDEFSDirCache
*Configure IDEFSBuffers
*Configure IDEFSDrive

Typical transfer speeds

Prairie Tek	20Mb	650K bytes per second
Seagate	43Mb	800K bytes per second

Prices

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£249
ADA 0530	100Mb	16mS	£379
ADA 0570	200Mb	15mS	£499
ADA 0580	330Mb	15mS	£895

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

For A3000 users an additional external Case and PSU will be required.

AAA 0300	External Case & PSU for A3000	£85

Internal Hard Disc Drives for A3000

State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0700	21Mb	23mS	£185
ADA 0720	44Mb	19mS	£385
ADA 0750	60MB	18MS	£425
ADA 0730	89Mb	18mS	£685

Supplied ready assembled. No soldering required. Simply plug into the alloted space.

Archi IDE Hard Cards

"Simply plug and play"

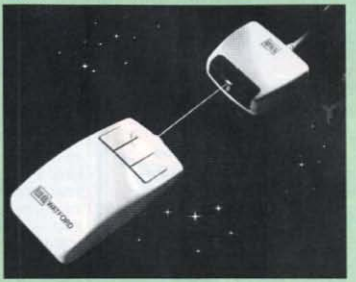
Watford's NEW low cost, high performance revolutionary IDE Hard Cards for the A300 and A400 series Archimedes are unbelievably easy to install – you simply slot one into any vacant podule backplane slot in the rear of your computer. These stunningly engineered, light weight but fast, 2.5" miniature hard drives are mounted onto the professionally designed cards, and are supplied with the fully Acorn-conformant IDE Filing System ready installed and ready to run. A novel feature of the hard cards is that they can be easily removed and transported to another Archimedes, for example to make a hard disc backup, or to transfer saved files from work to home etc. Security of files on the hard disc is ensured by our unique security password lock, which allows files to be read only, but not overwritten or deleted – ideal for use in school applications where the integrity of your master software needs to be retained.

ADA 0650	21Mb	23mS	£199
ADA 0660	44Mb	28mS	£375
ADA 0670	89Mb	18mS	£675

(Can be used as a Removable Hard Drive)

NEW

Archimedes Cordless Mouse



Ever found that using a mouse on a busy desktop has its problems? The cable is always being caught up in papers, tangled round equipment and other cables etc, and what about that cup of coffee spilled over your work!

Watford Electronics' new Cordless Mouse solves these problems by removing the cause for concern - replacing the cable with a simple infra red link. It still provides all the speed and easy control of a conventional mouse, but with complete freedom. In use, there are no operating differences between the standard mouse and the new cordless mouse so all mouse functions and mouse driven RISC software will be fully compatible. Pinpoint accuracy is ensured by a unique Accelerator button, which, when pressed, moves the pointer by just a tiny amount for a large slow movement of the mouse, but by a large amount for a quick wizz of the mouse.

Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

Price £59

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- Panasonic Premier Dealer
- Roland Plotter Official Dealer
- Star Printer Premier Dealer
- Taxan Appointed Monitor Dealer
- 3M Media Premier Distributor

Watford Electronics

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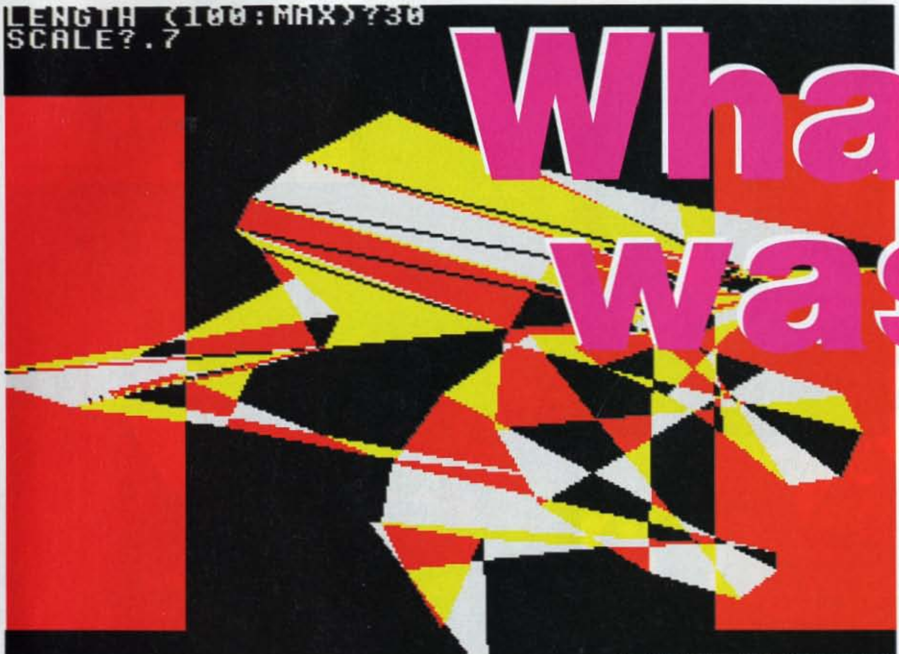
(B) BBC B (M) Master 128 (C) Compact (A) Archimedes

What a waste

Martin Dawe presents a fascinating program with lots of lines but no point



```
LENGTH (100:MAX)?30
SCALE?.7
POINTLESS LINE PROGRAM
WRITTEN BY MARTIN DAWE
```

THE listing given here is named the Pointless Line program: It prints lines, it's a program and it's almost pointless – but nonetheless it can be fun to experiment with

So what does it do? Well, it moves a ribbon or snake-like object around the screen using parameters that are under your control. When run, it gives you the choice of whether you would like it to display the graphics as plain lines, or in filled colour.

The latter is preferable to watch, but it can be quite slow on the 8 bit micros. On the Archimedes, the program runs with much more fluidity, with a higher screen resolution, and lots more colours. So basically, upgrade if you have not already, if only for the sake of this program.

After selecting either of the above options, you are then asked for a length, and a scale. These refer to the number of sections which will appear in the ribbon-like animation. The scale is the size of each of these sections. A few suggestions for these variables are listed below.

```
Length : 20   2  100  80  -1   2
Scale : 0.7  0.1  0.2  2  0.2  2
```

The program works by joining, with a line or a solid block, two ever changing coordinates which have independently varying speeds. These bounce off the sides of the screen, so as not to disappear. The number you entered for length is the number of these lines which will be displayed on screen at any time.

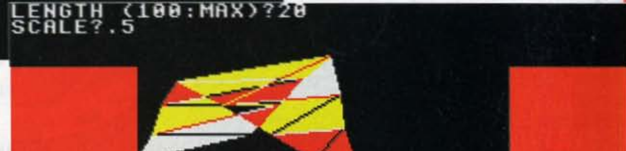
This limiting factor is achieved by the computer storing up to 100 of the coordinates for each of these lines. Archimedes owners can increase this by changing the DIM statements (near the start of the program). When more lines are drawn, the end lines are deleted, giving the effect of the whole object moving.

The line ends are joined to each other by lines linking their endpoints. If you've opted for solid graphics the quadrilateral so formed is flood filled with two triangles.

The program currently uses random numbers to change the lines' coordinates, which makes the pattern produced quite disorganised. A more effective way of controlling these coordinates might be to incorporate pre-calculated data for different effects.

For example the pattern could start

➤



```
LENGTH (100:MAX)?20
SCALE?.5
POINTLESS LINE PROGRAM
WRITTEN BY MARTIN DAWE
```

Changes for Archimedes/A3000

The following list shows which lines you should change to convert the program for the 32-bit Acorn machines.

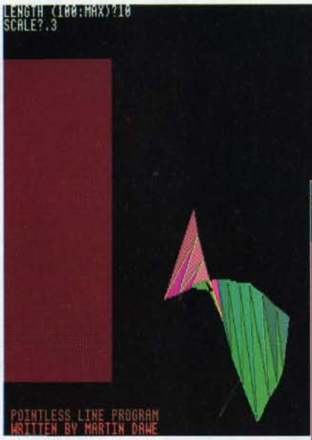
```
 40 MODE$$15$$:VDU23,1,0;0;0;0;
150 DIM c1x(101),c1y(101),c2x(1
01),c2y(101),col(101),$$tint(101)$$
220 $$tint=0$$
400 $$tint=tint+64$$
410 $$IF tint<255 tint=0:$$col=co
l+1
420 IF col<$$63$$ col=1
440 $$tint(rn)=tint$$
460 PROCblock(x1,y1,x2,y2,c1x(f
nrn),c1y(fnrn),c2x(fnrn),c2y(fnr
n),col,$$tint$$)
470 IF stc>L% stc=stc+1 ELSE on
=on+1:fnrn=FNreen(on):PROCblock(
c1x(on),c1y(on),c2x(on),c2y(on),
c1x(fnrn),c1y(fnrn),c2x(fnrn),c2
y(fnrn),col(on),$$tint(on)$$)
900 GCOL 3,cl $$TINT tn$$
940 GCOL 3,cl+4 $$TINT tn$$
1000 GCOL3,$$63$$
```

➤

spinning around in circles every now and then, or symbolise shapes like a car. Mathematical functions such as sine, and cosine, and square roots could also control the movement of the shape and produce some quite interesting effects.

Alternatively, the program could be made into some type of game: The length could be set to a small number such as three, the scale to about 0.5, and the resulting shape could be manipulated from the keyboard, using preset data to produce a moving spacecraft. Add a few stars and objects to destroy, and you're laughing.

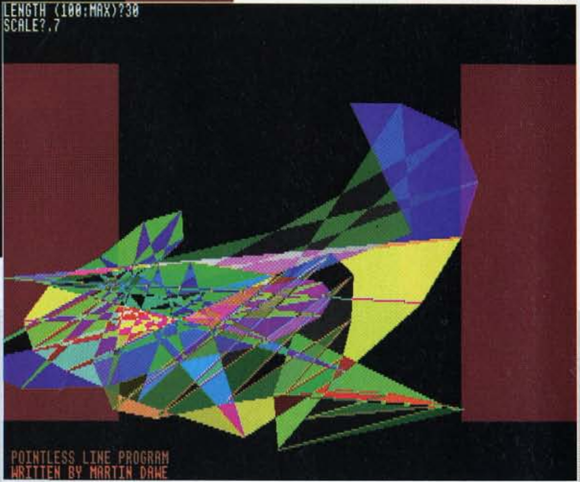
● *Anyway have fun with this program, as I'm sure you will, and get caught by that hypnotic pointlessness.*



```
LENGTH (100:MAX)?10
SCALE?.3
```

```
POINTLESS LINE PROGRAM
WRITTEN BY MARTIN DAWE
```

You can have short...



```
LENGTH (100:MAX)?30
SCALE?.7
```

```
POINTLESS LINE PROGRAM
WRITTEN BY MARTIN DAWE
```

... or long ribbons

```
   10 REM Pointless line program
   20 REM by Martin Dawe
   30 REM (c) The Micro User
   40 MODE1:VDU23,1,0;0;0;0;
   50 ONERRORPROCERR
   60 PRINT"POINTLESS LINE PROGRAM"'
   70 REPEAT
   80 INPUT"(L)INES OR (S)OLID";o$
   90 UNTIL INSTR("LlSs",o$)
  100 IF INSTR("Ll",o$) lines=TRUE ELSE
lines=FALSE
  110 CLS
  120 INPUT"LENGTH (100:MAX)";L%
  130 INPUT"SCALE";SC
  140 PROCsetup
  150 DIM c1x(101),c1y(101),c2x(101),c2y
(101),col(101)
  160 rn=0
  170 stc=0
  180 on=0
  190 dx1=50:dy1=50:dx2=20:dy2=20
  200 x1=0:y1=0:x2=100:y2=0
  210 col=0
  220 :
  230 REPEAT
  240 c1x(rn)=x1
  250 c1y(rn)=y1
  260 c2x(rn)=x2
  270 c2y(rn)=y2
  280 IF x1>1279 dx1=-100
  290 IF x1<8 dx1=100
  300 IF x2>1279 dx2=-100
  310 IF x2<8 dx2=100
  320 IF y1>850 dy1=-100
  330 IF y1<100 dy1=100
  340 IF y2>850 dy2=-100
  350 IF y2<100 dy2=100
  360 IF x2>x1+300 dx1=dx1+96:dx2=dx2-96
  370 IF x1>x2+300 dx1=dx1-96:dx2=dx2+96
  380 IF y2>y1+300 dy1=dy1+96:dy2=dy2-96
  390 IF y1>y2+300 dy1=dy1-96:dy2=dy2+96
  400 :
  410 col=col+1
  420 IF col>3 col=1
  430 col(rn)=col
  440 :
  450 fnrn=FNreen(rn)
  460 PROCblock(x1,y1,x2,y2,c1x(fnrn),c1
y(fnrn),c2x(fnrn),c2y(fnrn),col,0)
  470 IF stc<L% stc=stc+1 ELSE on=on+1:f
nrn=FNreen(on):PROCblock(c1x(on),c1y(on)
,c2x(on),c2y(on),c1x(fnrn),c1y(fnrn),c2x
(fnrn),c2y(fnrn),col(on),0)
  480 IF rn>L% rn=0
  490 IF on>L% on=0
  500 rn=rn+1
  510 x1=x1+(dx1*SC)
  520 x2=x2+(dx2*SC)
  530 y1=y1+(dy1*SC):y2=y2+(dy2*SC)
  540 IF RND(2)=1 dx1=dx1+20 ELSE dx1=dx
1-20
  550 IF RND(2)=1 dx2=dx2+20 ELSE dx2=dx
2-20
  560 IF RND(2)=1 dy1=dy1+20 ELSE dy1=dy
1-20
  570 IF RND(2)=1 dy2=dy2+20 ELSE dy2=dy
2-20
  580 IF INKEY(-1) THEN G=0 ELSE G=150
  590 IF G<150 THEN G=G+1:GOTO 590
  600 UNTIL 0
  610 DEFFNreen(ren)
  620 IF ren=1 =L%+1
  630 IF ren=0 =L%+1
  640 =ren-1
  650 DEFPROCERR
  660 PRINTTAB(0,2)"Do you wish to conti
nue?"
  670 IF GET=89 RUN
  680 END
  690 DEFPROCsetup
  700 GCOL 0,1
  710 MOVE 0,128
  720 MOVE256,895
  730 PLOT85,0,895
  740 MOVE0,128
  750 MOVE256,128
  760 PLOT85,256,895
  770 MOVE1279,128
  780 MOVE1023,895
  790 PLOT85,1279,895
  800 MOVE1279,128
  810 MOVE1023,128
  820 PLOT85,1023,895
  830 COLOUR6
  840 PRINTTAB(1,30)"POINTLESS LINE PROG
RAM"
  850 COLOUR7
  860 PRINTTAB(1,31)"WRITTEN BY MARTIN D
AWE";
  870 ENDPROC
  880 DEFPROCblock(xa,ya,xb,yb,xa2,ya2,x
b2,yb2,cl,tn)
  890 IF lines PROCline:ENDPROC
  900 GCOL 3,cl
  910 MOVE xa,ya
  920 MOVE xb,yb
  930 PLOT85,xa2,ya2
  940 :
  950 MOVE xa2,ya2
  960 MOVE xb2,yb2
  970 PLOT85,xb,yb
  980 ENDPROC
  990 DEFPROCline
 1000 GCOL3,3
 1010 MOVE xa,ya
 1020 DRAW xb,yb
 1030 MOVE xa,ya
 1040 DRAW xa2,ya2
 1050 MOVE xb,yb
 1060 DRAW xb2,yb2
 1070 ENDPROC
```

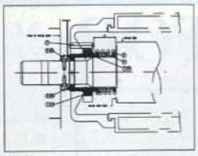
TAKE IT EASY

If you would like to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*

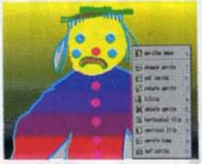
Get it right

```
  10 =    0 0    230 = BFBA 1    450 = 76E1 B    670 = DCA4 9     890 = 3B02 7
  20 =    0 0    240 = 4A93 F    460 = 5E81 A    680 = FD2E 6     900 = B9AC E
  30 =    0 0    250 = 3E71 5    470 =  F61 2    690 = 2AA8 2     910 = 72AC 5
  40 = 6864 4    260 = 57B4 F    480 = 7233 2    700 = 619B 2     920 = D913 F
  50 = 9C0E E    270 = 2356 0    490 = 4CBF E    710 = 2D2B 6     930 = 690F 1
  60 = 93B4 4    280 = DE61 9    500 = C5B4 0    720 = 3885 2     940 = 9719 0
  70 = BFBA B    290 = A087 2    510 = 9D8F E    730 = 93C3 2     950 = DC19 9
  80 = B451 B    300 = F3A4 A    520 =  D37 7    740 = D270 8     960 = 47AA D
  90 = 2FA5 C    310 = 36AF 8    530 = 1F4C C    750 = AB43 4     970 = F43D 2
 100 = 6C19 B    320 = F403 5    540 = 4DE0 1    760 = 65F2 7     980 = ED0F A
 110 = 7A16 7    330 = EEA6 4    550 = 4154 1    770 = D7FC B     990 = 961E F
 120 = 2DD4 5    340 = B740 3    560 = 917B 6    780 = 2176 7    1000 = 7A3D D
 130 = C7B2 C    350 = CFD1 5    570 = 9DCF 7    790 = B862 7    1010 = 72AC B
 140 = 81CC 8    360 =  CCE 2    580 = DB1A 7    800 = D7FC D    1020 = 581C 1
 150 = 6786 8    370 = 9182 A    590 = 7254 C    810 = B2B0 1    1030 = 72AC 5
 160 = 6AED 6    380 = 7A96 5    600 = 91B6 7    820 = DD2E 4    1040 =  55F 6
 170 = FC71 A    390 = E7DA C    610 = 3603 E    830 = 99AE 2    1050 = D913 B
 180 = 48CC D    400 = 9719 8    620 = 269A 6    840 = 7266 8    1060 = 9EEC 5
 190 = B13F F    410 = 69F3 3    630 = 9EFB 7    850 = 898F 9    1070 = ED0F A
 200 = CC3D F    420 = `D3F 0    640 =  BFF 0    860 = BE43 A
 210 = D1A2 7    430 = 59EF 3    650 = 808A 2    870 = ED0F 2
 220 = 9719 9    440 = 9719 5    660 = 87DB 0    880 = 18E2 1
```

HOME ACCOUNTS


CADET

DESKTOP OFFICE

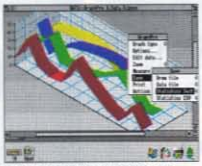

PRIMEART

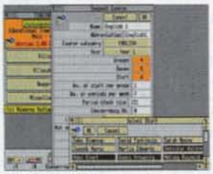
TAKE YOUR PICK!

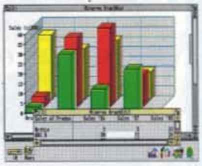
ATELIER

ANCESTRY

PRIMEART


GRAPHBOX PROFESSIONAL


TIMETABLER


GRAPHBOX

System Delta+
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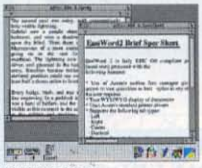
ATELIER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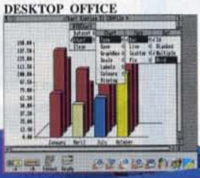

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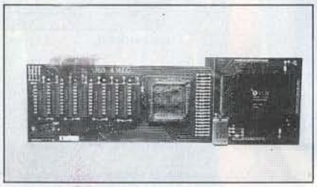

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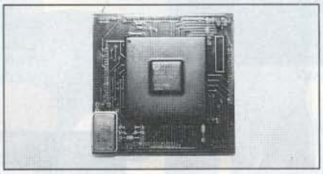

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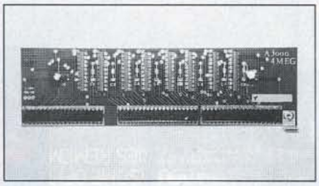

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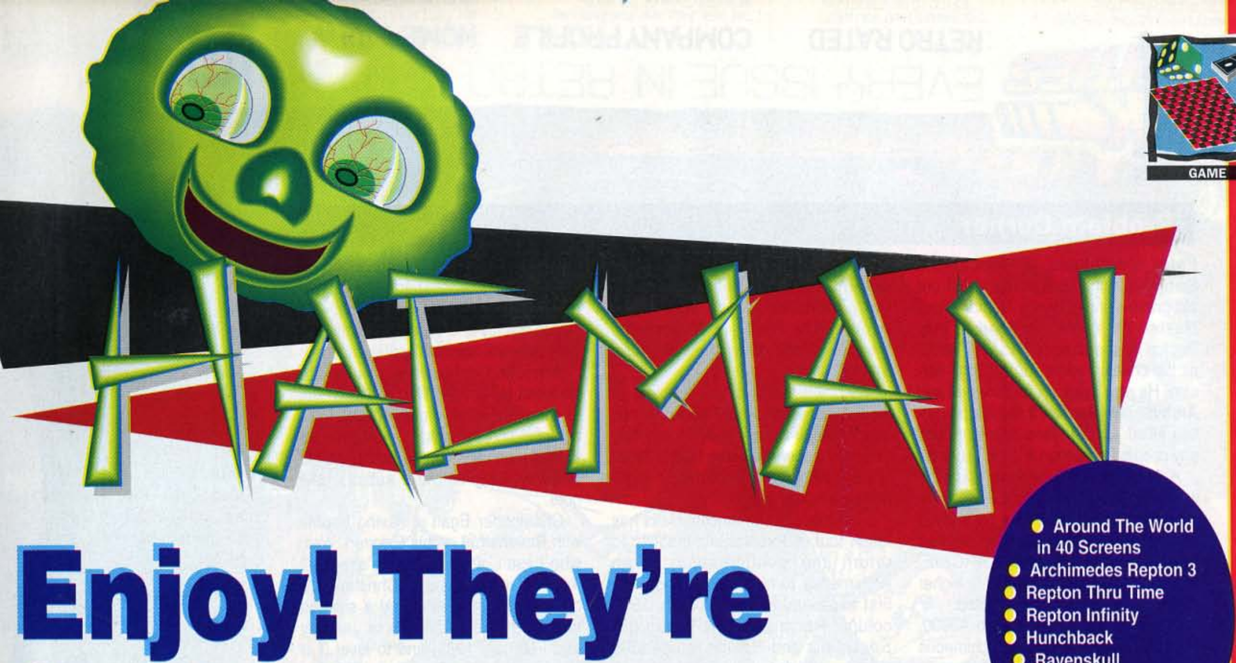

- Around The World in 40 Screens
- Archimedes Repton 3
- Repton Thru Time
- Repton Infinity
- Hunchback
- Ravenskull
- Pipemania
- Lemmings
- Vertigo

Enjoy! They're features not bugs

Happy Birthday to me! Happy Birthday to me! Yes, this column is five years old this month, and we have certainly got a mixed bag of goodies that should appeal to all Acorn owners. On with the show!

At the last Watford Electronics Open Day I ran into Steve Hanson of Superior Software, who asked me to point out what many **Vertigo** sufferers may see as a bug, but is actually a feature of the game.

On screen 6 of level 5 you start with a mere six units of time on the clock, which makes it impossible to complete the screen.

This is true, but only if you choose to practice that screen by entering its password.

The only way to complete this screen is to first play through a previous level and finish with some time remaining on the clock.

This will be carried forward to screen 6, which – together with that level's six units of time – should be enough to see you through.

Oh no! More lemmings

I recently received a letter from a lady reader, Eileen Godfrey of Milford, near Godalming in Surrey, who has completed Krisalis's great game, **Lemmings**. In fact, it took her a few hours short of four weeks to complete all 120 levels. Pretty good going.

Eileen has two tips that I am sure will prove useful to anyone having problems with the little creatures:

- A Blocker can be restored to normal by digging underneath him so that he falls into the hole.
- A simple method of turning a single lemming around is to make him dig down a little way – doesn't matter whether it's a digger or miner – then make him build. He'll run into the side of the hole he's just dug and will turn around and walk out of the other side.

Happy Lemminging!

Back to the Hunch

Whoops! In the November 1991 column I ran a feature about a Master conversion routine for the Mk.2 version of Superior's original Hunchback, courtesy of Alan Fairclough of Tranmere.

The only problem was that the actual conversion routine never made it to paper.

So to make amends, here it is:

```
   10 REM Hunchback to Maste
r conversion
   20 REM for original Super
ior tape version 2
   30 REM by Alan Fairclough
 1991
   40 REM (C) The Micro User
   50 REM
   60 IF PAGE=&7000 THEN GOT
O 120
   70 MODE 7:VDU 23,1,0;0;0;
0;
   80 FOR I%=0 TO (TOP-PAGE)
STEP4:I%!&7000=I%!PAGE:NEXT
   90 *KEY0 PAGE=&7000|M END
\|M OLD|M RUN|F|M
  100 VDU 21:*FX 138,0,128
  110 END
  120 oswrch=&FFEE:osbyte=&F
FF4
  130 *FX 200,2
  140 *KEY0 PAGE=&1600|M END
|M OLD|M RUN|F|M
  150 FOR I%=0 TO 2 STEP 2:P
%=&900:[OPT I%
  160 LDA# 0:STA &70:STA &72
:LDA# &1D:STA &71:LDA# &0D:S
TA &73
  170 LDX# &23:LDY# 0:.loop
LDA (&70),Y:STA (&72),Y:INY:
BNE loop
  180 DEX:BEQ end:INC &71:IN
C &73:JMP loop
  190 .end LDA# &15:JSR oswr
ch
  200 LDA# &8A:LDX# 0:LDY# &
80:JSR osbyte
  210 JMP &8000
  220 ]:NEXT:*FX 15,0
  230 MODE 7:PRINT "Please i
nsert Hunchback tape, and pr
ess a key...";
  240 A%=GET:PRINT'
  250 *LOAD HUNCHBACK 3000
  260 FOR I%=0 TO 6 STEP 6:P
%=&2777:O%=&6F00:[OPT I%
  270 .patch LDA &0D04:BNE c
heckkeys:JMP &2BF0
  280 .checkkeys LDX# &9E:JS
R keyread:STX &0D14
  290 LDX# &BD:JSR keyread:S
TX &0D15
  300 LDX# &96:JSR keyread:S
TX &0D13:RTS
  310 .keyread LDA# &81:LDY#
 &FF:JMP osbyte
  320 ]:NEXT:PROCload:CALL &
970:!&1DCC=&00099D8E
  330 FOR I%=0 TO (P%-patch-
1):I%?&3777=I%?&6F00:NEXT:CA
LL &900
  340 END
  350 DEFPROCload
  360 !&970=&208D99A9:!&974=
&8D09A902
  370 !&978=&0EA90221:!&97C=
&F42004A2
  380 !&980=&A08FA2FF:!&984=
&FFF72009
  390 !&988=&04A20DA9:!&98C=
&4CFFF44C
  400 !&990=&2022222E:!&994=
&30304431
  410 !&998=&8A48080D:!&99C=
&AD489848
  420 !&9A0=&FE2903CA:!&9A4=
&6803CA8D
  430 !&9A8=&68AA68A8:!&9AC=
&524D6028
  440 ENDPROC
```

Problem Corner

Peter MacDonald of Wincanton, Somerset has written to me about our old green-skinned buddy Repton. As a Master 128 owner he used to play Repton 3, and used to find very useful all the cheats I wrote for the BBC version. He now owns an Archimedes and **Archimedes Repton 3** but keeps getting killed. Can anyone come up with any cheats for Repton 3, 32-bit style?

A. Watkins of Whitehaven, Cumbria is having problems with a feature on Nevryon that he found in a back-issue of *The Micro User*. He says he has tried using the passwords ARCHIE, REBEL and STEREO to jump to higher levels, but these are not accepted.

In fact Mr Watkins owns an A3000, and the passwords on the Archimedes version of Nevryon are different to those on the BBC version. As first featured in the September 1991 column, the passwords for levels 3, 5 and 7 are MIRADOR, ISENGARD and KRYNN respectively.

Mrs M. Jenkins of Holt, Clwyd has been experiencing problems with several screen from Repton's various adventures, and would like to know the passwords for the screens of **Around The World in 80 screens**, **Repton Thru Time** and **Repton Infinity**.

Well, Mrs Jenkins, the full sets of these passwords would be rather too substantial to reproduce here, but they originally appeared in the March 1988, March 1989 and September 1989 columns respectively.

D. Turnbull of Harpenden, Herts has fallen foul of **Pacmania**'s inability to return the configuration of an Archimedes to its initial setting. As I first explained in the February 1990 column Pacmania *UNPLUGs the *SpriteUtils* and *Podule* relocatable modules and does not reinstate them.

To get around this you must press F12 and:

```
*RMREINIT SpriteUtils
*RMREINIT Podule
```

A quick plug here for **Configure!** from The 4th Dimension which allows you to save your configuration settings to disc, thereby enabling the user – particularly of a 1Mb machine – to switch quickly and easily between radically different machine configurations.

Although Configure! is an absolute godsend for anyone who regularly has to change a number of their machine's configuration settings, it should not be viewed as a substitute for *doing the job properly*. Lazy software authors take note...

Christopher Egan is having trouble with **Ravenskull** on his Electron. Well, who hasn't, at one time or another? Anyway, in response to Christopher's request for help, I featured a solution to level 1 in the columns of January and February 1989, and to level 2 in November 1990, December 1990 and February 1991.

I also have a solution to level 3 sitting in the wings waiting for some spare column inches, but if anyone needs more immediate help with this level, then – as always – help is at hand for only the price of an SAE.

Where no one has gone before...

When, under the pseudonym of *David Donaldson* – not my real name either – I used to make occasional contributions to the Electron User Arcade Corner, I noticed that **Starship Command** was very popular with EU readers.

While recently thumbing through my older Hac-Man columns, I noticed that I have never afforded this classic game even a single column inch.

So to make amends here is an infinite lives poke for the game that will work on all BBC Acornsoft Hits versions plus the original BBC Acornsoft cassette version of Starship Command. I also prefer different playing keys to those of the unmodified game, and my preferences are implemented by *PROCkeys*. Any readers happy with the default keys should add the following line:

```
675 RTS
```

To all the saviours of the universe, fare ye well!

```
   10 REM Starship Command c
heat
   20 REM for all BBC Acorns
oft Hits versions
   30 REM plus original BBC
Acornsoft cassette
   40 REM by Hac-Man 1991
   50 REM (C) The Micro User
   60 REM
   70 IF PAGE=&5800 GOTO 120
   80 FOR I%=0 TO (TOP-PAGE)
STEP 4:I%!&5800=I%!PAGE:NEXT
   90 *KEY0 PAGE=&5800|M END
|M OLD|M RUN|F|K|M
  100 VDU 21:*FX138,0,0128
  110 END
  120 VDU 23,224,65,65,65,67
,231,167,165,163
  130 VDU 23,225,4,4,4,132,2
06,202,74,138
  140 VDU 23,226,251,79,67,5
,13,13,13,7
  150 VDU 23,227,190,228,132
,64,96,96,96,192
  160 osargs=&FFDA:osbyte=&F
FF4:oscli=&FFF7
  170 A%=0:X%=&70:Y%=0:F%=US
R(osargs) AND &FF
  180 MODE 7:PRINT "Please i
nsert Starship Command ";:*F
X15
  190 IF F%=1 THEN PRINT "ta
pe" ELSE PRINT "disc"
  200 PRINT "and press a key
...";:A%=GET:PRINT
  210 IF F%=1 PROCtape ELSEI
F F%=4 PROCdisc ELSE IF F%=8
 PROCadfs
  220 !shield=&8D00E938:REM
infinite energy
  230 keys=&900:PROCkeys:CAL
L keys
  240 CALL start
  250 END
  260
  270 DEFPROCtape
  280 shield=&1ADE:keys1=&21
48:keys2=&3DDC:start=&47B1
  290 !&970=&208D99A9:!&974=
&8D09A902
  300 !&978=&0EA90221:!&97C=
&F42004A2
  310 !&980=&A08FA2FF:!&984=
&FFF72009
  320 !&988=&04A20DA9:!&98C=
&4CFFF44C
  330 !&990=&4154532E:!&994=
&50485352
  340 !&998=&8A48080D:!&99C=
&AD489848
  350 !&9A0=&FE2903CA:!&9A4=
&6803CA8D
  360 !&9A8=&68AA68A8:!&9AC=
&524D6028
  370 PRINT:*LOAD "" E00
  380 IF !&E3A=&726F6341 THE
N !&991=&000D2222
  390 IF !&E3A<>&726F6341 TH
EN shield=&1DDE:keys1=&2448:
keys2=&40DC:start=&53B0
  400 PRINT:CALL &970
  410 ENDPROC
  420
  430 DEFPROCdisc
  440 shield=&1DDE:keys1=&24
48:keys2=&40DC:start=&53B0
  450 *LOAD STARSHP
  460 ?&9B4=&60:CALL &970
  470 ENDPROC
  480
  490 DEFPROCadfs
  500 shield=&2CDE:keys1=&33
48:keys2=&4FDC:start=&62B0
  510 *MOUNT
  520 FOR I%=0 TO 2 STEP 2:P
%=&900:[OPT I%
  530 JSR &1F0F:JSR &7100
  540 JSR keys:\ change play
ing keys
  550 LDA# &38:STA shield:LD
A# &E9:STA shield+1:LDA# 0:S
TA shield+2
  560 JMP &1F00
  570 .keys
  580 ]:NEXT
  590 PROCkeys
  600 ?&C413=&F2:*RUN !BOOT
  610 !&21B5=&60AA00A9
  620 PRINT '"Press ""1"" on
 title screen"'"to load Star
ship Command:";
  630 A%=INKEY(500):CALL &90
0
  640 ENDPROC
  650
  660 DEFPROCkeys
  670 FOR I%=0 TO 2 STEP 2:P
%=keys:[OPT I%
  680 LDA# &B7:STA keys1:\ I
NKEY No. for * (up)
  690 LDA# &97:STA keys1+1:\
 INKEY No. for ? (down)
  700 LDA# &A7:STA keys1+2:\
 INKEY No. for ] (fire)
  710 LDA# &5D:STA keys2:\ c
hange N in title page to ]
  720 LDA# &3A:STA keys2+&17
:\ change title page M to *
  730 LDA# &2F:STA keys2+&26
:\ change title page , to ?
  740 RTS
  750 ]:NEXT
  760 ENDPROC
```

In the pipeline

The passwords for Empire/Superior's Pipemania, courtesy of Robin Jubber of Canterbury, are as follows:

Levels 1-4 :no password
Levels 5-8 :SCHNAPPS
Levels 9-12:SYMMETRY
Levels 13-16:TRIPTYCH
Levels 17-20:SKYLARKS
Levels 21-24:RHYTHMIC
Levels 25-28:FLYBLOWN
Levels 29-32:KNIGHTLY
Levels 33-36:GYMNASTS

Thank you Robin.

In addition, Steve Hanson of Superior tells me that the game also features a number of cheat passwords which can be used either separately or in conjunction with the normal passwords:

Slowworm – slows the flooze when you press the spacebar.

Skippers – jump to the next level by pressing the right-cursor key.

Bombards – causes pieces to be overlayed instantly, without any time delay or penalty.

Waitress – when this is activated, the layout display does not disappear when the game is paused.

Please note that the passwords are case sensitive. This means that only SCHNAPPS will allow you access to levels 5-8. The cheat passwords have an initial capital letter, followed by seven lower case letters – no other combination will be accepted. When entering the cheat passwords you must also press Shift+Return to finish, not Return as for the normal ones.

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LET'S COMPUTE!

Rom and Ram

LAST time Rom and Ram began looking at how to move images across the screen using very simple commands. By interchanging two different images a more realistic form of animation was achieved but Rom still wasn't satisfied.

Although the program worked, the sprite – if it could be called that – was one colour and not very big. So to keep Rom happy we'll be making him a nice multi-coloured sprite to move around by using what are known as *indirection operators* (what?) but more about those later.

Let us first return to last month's program, which this month is called Mar1, and see if we can improve it a bit first.

Two different images were created, *A$* and *B$*, and these two strings were printed alternately to give the impression of a mouth opening and shutting. It would be a lot faster and neater if instead of the two separate strings we use a string array.

Now these are used when you have a *group* of words or numbers or data that you want to manipulate. So instead of:

```
40 A$ = CHR$224
50 B$ = CHR$225
```

We could do this:

```
15 DIM A$(2)
40 A$(1) = CHR$224
50 A$(2) = CHR$225
```

First we have to DIMension our array – line 15 – which means we decide how many elements to have in our list. Then we can set up our first element of the array, A$(1) = CHR$224 and the second one A$(2) = CHR$225 and so on. This is an extremely useful way of storing strings or numbers as you can use a variable to represent the element number:

For example:

```
X% = 2
PRINT A$(X%)
```

Would print A$(2) to the screen as the variable *X%* is set to 2.

Now alter these lines:

```
80 PRINTTAB(X,Y)A$(1)
90 C = 1
160 PRINTTAB(X,Y)A$(C)
220 C = C MOD2+1
```

and remove line 170 completely.

So now, instead of two conditional (IF) statements at lines 160 and 170 to determine which image to print, the variable *C* alternates between 1 and 2 and line 160 PRINTs either A$(1) if C = 1 or A$(2) if C = 2. This is by far a neater, quicker and sensible way to swap between images, especially as the number of separate images increases.

Incidentally, we could have used A$(0) and A$(1) as opposed to A$(1) and A$(2) as DIMensioning an array always includes element number 0. So DIM A$(2) actually has three elements, DIM name$(24) has 25 and so on.

Also you can have numeric arrays, for instance, DIM A%(15) or DIM num%(5) which contain numbers as opposed to strings. These are both known as single dimension arrays. But you can also have multi-dimensional ones like DIM G%(4,16) or DIM list%(date%,time%,amount%). But Rom is complaining that his brain is full, so let's move on to multi-coloured sprites.

Type in listing Mar2 and run it. Aha! A thoroughly fascinating multi-coloured head top left of the screen. Goodness! How is it done? Ram might not be impressed but Rom certainly is and he's intrigued by the question mark and the & sign in line 50 and all those numbers in DATA. See the Duck's Dungeon for an explanation of & and hexadecimal numbers.

When you write a program or load one into the computer it stores it in memory as a series of numbers at various memory addresses. You can look at the values stored in these addresses or alter them and this is done by using what are known as *indirection operators*. On other computers the process is called PEEKing and POKEing. The operators we are interested in here are ? and ! (pronounced pling) which deal with numeric values. Try this:

```
PRINT ?&25A
```

This will print out the *contents* of memory location &25A. Try:

```
?&25A = 16
```

This will put the number 16 into memory location whose address is &25A. The first example is what is known as PEEKing at memory and the second example is known as POKEing to memory.

Now look at this:

```
B% = &3000
I% = 4
B%?I% = 69
```

It means: Let memory location at *B% plus I%* equal 69. So memory location &3004 = 69. So by having one fixed value and one variable we can access successive memory locations simply by using a loop. For example:

```
B% = &1900
FOR I% = 0 TO 7
PRINT B%?I%
NEXT
```

would print out the contents of memory locations &1900 to &1907 inclusive.

```
B% = &3000
FOR I% = 0 TO 7
B%?I% = RND(255)
NEXT
```

would cause memory locations &3000 to &3007 to contain random numbers.

So what's all this memory poking business for? Well, it just so happens that the screen display is in memory too so if we poke a number to a screen memory location we can *see* the effect on screen.

This takes us back to our program. In MODE2 the start of screen memory is at &3000 which is the top left of the screen.

Now things start to get a bit complicated but if you can pay attention Rom and put that box of sausage rolls down we will begin. Each memory location – byte – displays two pixels whose colour depends on the number you poke in.

The memory is stored first in columns eight bytes deep – which is the height of a text character – and then moves across the screen. As each character is eight pixels wide you can see that it takes 32 bytes to store a sprite of one character width and depth.

That is why there are 32 numbers in DATA in our program which are first READ into the variable *N%* at line 40 and then POKEd to the screen at line 50.

Try altering some of the values in DATA and see what happens. Only use values between 0 and 255.

If you want to draw a wider sprite this is dead easy. Simply increase the loop at line 30 to 63 in order to poke more numbers from DATA and add sufficient DATA to avoid errors. Listing Mar3 draws a multicoloured flag.

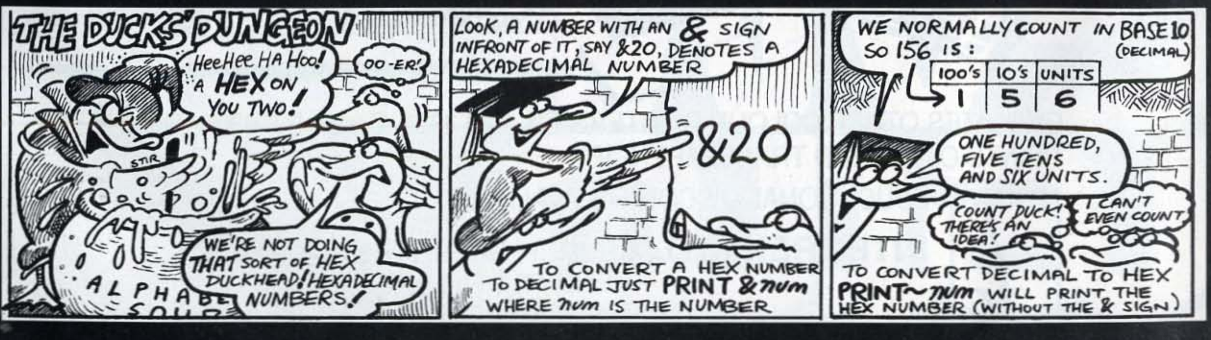
Things become a little trickier when it comes to drawing a sprite more than one character deep. Take a peek at Listing Mar4 which draws a man.

The first screen memory location is stored in the variable *M%* and the top character is drawn to the screen within the loop lines 30 to 60. When we want to draw the bottom half of the character we need to offset *M%* by 640.

If you refer back to Figure I you'll see that the difference between the first memory location on each row is 640.

Try altering *M%* to some value other than &3000 if you're sick of seeing everything stuck up in the top left hand corner. The screen memory is between &3000 and &8000 in MODE2 and make sure your hexadecimal figure ends in either 0 or 8 or you may encounter some strange results.

Listing Mar5 draws a sprite two characters wide by two deep but by now you can see that it's taking some time to draw the complete image. Imagine how slow things will be when


THE DUCKS' DUNGEON
HeeHee HA Hoo! A HEX ON YOU TWO!
OO-ER!
STIR
ALPHABET SOUP
WE'RE NOT DOING THAT SORT OF HEX DUCKHEAD! HEXADECIMAL NUMBERS!
LOOK, A NUMBER WITH AN & SIGN INFRONT OF IT, SAY &20, DENOTES A HEXADECIMAL NUMBER
&20
TO CONVERT A HEX NUMBER TO DECIMAL JUST PRINT &num WHERE num IS THE NUMBER
WE NORMALLY COUNT IN BASE 10 (DECIMAL) SO 156 IS:
100's 10's UNITS
1 5 6
ONE HUNDRED, FIVE TENS AND SIX UNITS.
COUNT DUCK! THERE'S AN IDEA!
I CAN'T EVEN COUNT
TO CONVERT DECIMAL TO HEX PRINT~num WILL PRINT THE HEX NUMBER (WITHOUT THE & SIGN)

In glorious colour

Mike Goldberg gets out his paintbrush

```
   1 REM Mar1
  10 MODE5
  20 VDU23,224,60,114,118,
255,255,126,126,60
  30 VDU23,225,60,114,86,2
23,207,64,100,60
  40 A$=CHR$224
  50 B$=CHR$225
  60 X=1:Y=12
  70 COLOUR2
  80 PRINTTAB(X,Y)A$
  90 C=0
 100 REPEAT
 110 xadd=0:yadd=0
 120 IFINKEY-67xadd=1
 130 IFINKEY-98xadd=-1
 140 IFINKEY-73yadd=-1
 150 IFINKEY-105yadd=1
 160 IFC=0PRINTTAB(X,Y)A$
 170 IFC=1PRINTTAB(X,Y)B$
 180 FORT=1TO100:NEXT
 190 PRINTTAB(X,Y)" "
 200 X=X+xadd
 210 Y=Y+yadd
 220 C=(C+1)MOD2
 230 UNTIL0
```

```
  10 REM Mar2
  20 MODE2:B%=&3000
  30 FORI%=0TO31
  40 READN%
  50 B%?I%=N%
  60 NEXT
  70 PRINT'''''
  80
 490 REM Data for HEAD
 500 DATA5,15,27,27,17,17,
0,0,15,51,59,17,35,23,35,51
,15,51,55,34,19,43,19,51,10
,15,39,39,34,34,0,0
```

```
  10 REM Mar3
  20 MODE2
  30 FORI%=0TO63
  40 READN%
  50 B%?I%=N%
  60 NEXT
  70 PRINT'''''
  80
 490 REM Data for FLAG
 500 DATA63,0,21,21,21,21,
21,21,42,0,48,3,3,3,3,48,0,
48,6,6,6,6,18,32,0,32,24,12
,12,12,36,16,0,0,0,48,25,25
,25,48,0,0,48,51,51,51,48,0
,0,0,0,48,51,50,48,0,0,0,0,
48,32,0,32,0
```

```
  10 REM Mar4
  20 MODE2
  22 M%=&3000
  24 FORJ%=0TO1
  30 FORI%=0TO31
  40 READN%
  50 M%?I%=N%
  60 NEXT
  62 M%=M%+640
  68 NEXT
  70 PRINT'''''
  80
 490 REM Data for HEAD
 500 DATA0,0,0,4,36,36,32,
32,21,63,17,49,49,32,48,48,
42,63,34,50,50,16,48,48,0,0
,0,8,24,24,16,16,32,34,0,0,
0,0,0,20,48,15,3,2,2,2,40,4
0,48,15,3,1,1,1,20,20,16,17
,0,0,0,0,0,40
```

```
  10 REM Mar5
  20 MODE2
  22 M%=&3000
  24 FORJ%=0TO1
  30 FORI%=0TO63
  40 READN%
  50 M%?I%=N%
  60 NEXT
  62 M%=M%+640
  68 NEXT
  70 PRINT'''''
  80
 490 REM Data for DRACULA
 500 DATA0,0,2,34,34,51,51
,51,0,17,0,55,58,58,51,51,4
8,51,0,59,53,21,51,51,48,50
,50,17,17,51,51,17,48,49,49
,34,34,51,51,34,48,51,0,55,
58,42,51,51,0,34,0,59,53,53
,51,51,0,0,1,17,17,51,51,51
,17,17,17,17,0,0,0,0
 510 DATA3,2,2,35,35,51,51
,17,51,3,21,21,21,3,51,51,3
4,3,63,21,0,0,3,51,17,3,63,
42,0,0,3,51,51,3,42,42,42,3
,51,51,3,1,1,19,19,51,51,34
,34,34,34,34,0,0,0,0
```

```
  10 REM Mar6
  20 MODE2
  30 REM Poke data to &2D0
0 onwards
  40 mem%=&2D00
  50 FORI%=0TO127
  60 READN%
  70 I%?mem%=N%
  80 NEXT
  90
 100 screen%=&3000
 110 FORJ%=0TO1
 120 FORI%=0TO63
 130 screen%?I%=mem%?I%
 140 NEXT
 150 screen%=screen%+640
 160 mem%=mem%+64
 170 NEXT
 180 PRINT'''''
 190
 490 REM Data for DRACULA
 500 DATA0,0,2,34,34,51,51
,51,0,17,0,55,58,58,51,51,4
8,51,0,59,53,21,51,51,48,50
,50,17,17,51,51,17,48,49,49
,34,34,51,51,34,48,51,0,55,
58,42,51,51,0,34,0,59,53,53
,51,51,0,0,1,17,17,51,51,51
,17,17,17,17,0,0,0,0
 510 DATA3,2,2,35,35,51,51
,17,51,3,21,21,21,3,51,51,3
4,3,63,21,0,0,3,51,17,3,63,
42,0,0,3,51,51,3,42,42,42,3
,51,51,3,1,1,19,19,51,51,34
,34,34,34,34,0,0,0,0
```

we want to move something this size around the screen.

This is where ! comes in useful. The ? manipulates one byte at a time but ! manipulates four consecutive bytes and is therefore very much quicker.

Before we alter our question marks to plings let us first rearrange the program to store the DATA numbers of the sprite in memory. This will speed things up as reading numbers directly from memory is quicker than using READ DATA each time we want to draw a sprite. It is also the simplest way of accessing four bytes in a row with pling (!).

Look at listing Mar6. We need to somewhere safe to store our numbers so in this case we store them between the TOP of the program and HIMEM, see Figure II. So at line 40 we initialise our memory store at memory location &2D00 and lines 50 to 80 READs the DATA numbers and pokes them to memory.

We need only do this once as the numbers are now resident in memory and will be removed only if we overwrite them. Line 100 sets the first screen address to be &3000 and line 130 takes the data out of memory and dumps it on to the screen.

Notice also that while *screen%* is incremented by 640 as we expect *mem%* has 64 added to it as we want to access 64 bytes further on in memory to obtain the lower half of the sprite.

Well, it's still not quick enough, you can still see the image being drawn. This is where ! makes it's grand entrance. Alter these two lines of program Mar6:

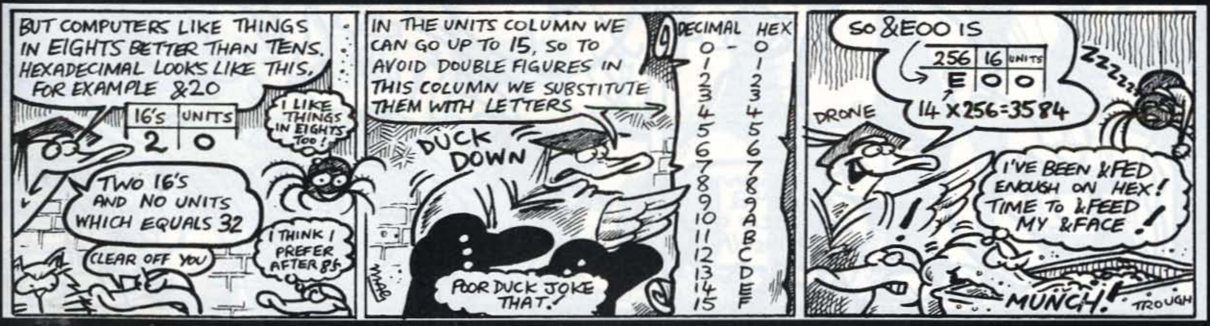
```
120 FOR I% = 0 TO 60 STEP 4
130 screen%!I% = mem%!I%
```

Now run this and you can see how much quicker it is. Line 120 STEPs through the loop in chunks of four and at line 130 four bytes are transferred from our memory store to the screen display each cycle of the loop.

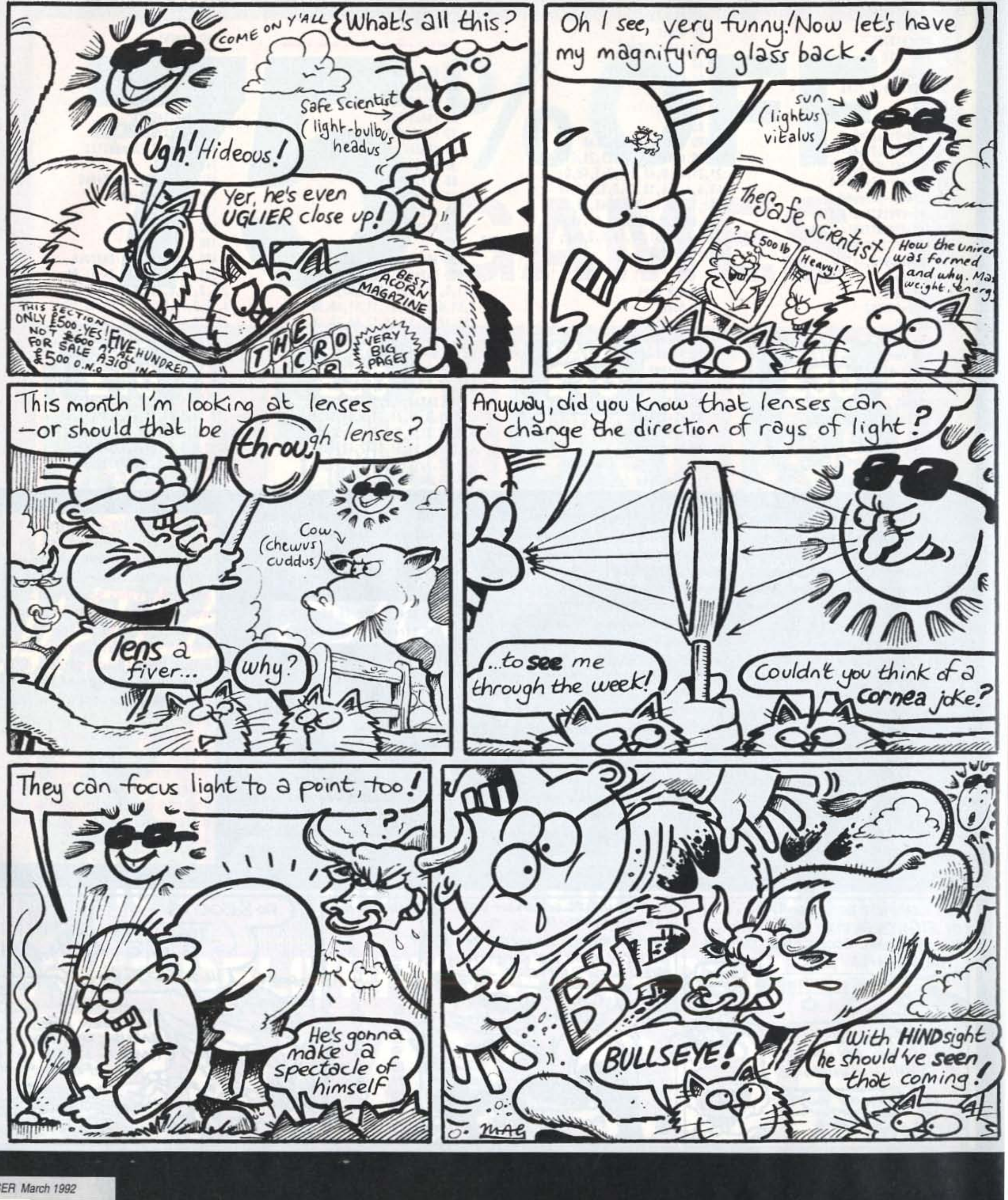
Additionally, you can speed things up by using System variables instead of the more meaningful ones used here. For instance, instead of *screen%* we could use *S%* and *M%* for *mem%*.

● Well, that's enough of the heavy stuff. Phew, bit of a toughie this month! Oh, if you think we've missed out the bit about MOVING sprites around well, it's easy enough. In brief all you do is poke zeros to the screen where the sprite was to erase the old image and alter screen% to a different value to place the sprite in it's new position.

However, there's a neat way of doing this too which we'll explore next month using procedures. And maybe, just maybe, you can create your own sprites if I can manage to lever Rom away from the games.


BUT COMPUTERS LIKE THINGS IN EIGHTS BETTER THAN TENS. HEXADECIMAL LOOKS LIKE THIS, FOR EXAMPLE &20
16's UNITS
2 0
I LIKE THINGS IN EIGHTS TOO!
TWO 16'S AND NO UNITS WHICH EQUALS 32
CLEAR OFF YOU
I THINK I PREFER AFTER 8's
IN THE UNITS COLUMN WE CAN GO UP TO 15, SO TO AVOID DOUBLE FIGURES IN THIS COLUMN WE SUBSTITUTE THEM WITH LETTERS
DUCK DOWN
DECIMAL HEX
0 - 0
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9
10 A
11 B
12 C
13 D
14 E
15 F
POOR DUCK JOKE THAT!
SO &E00 IS
256 16 UNITS
E 0 0
14 X 256=3584
DRONE
ZZZZZZ
I'VE BEEN &FED ENOUGH ON HEX! TIME TO &FEED MY &FACE!
MUNCH!
TROUGH

The Safe


COME ON Y'ALL
What's all this?
Safe Scientist (light-bulbus headus)
Ugh! Hideous!
Yer, he's even UGLIER close up!
BEST ACORN MAGAZINE
THIS SECTION ONLY £500. YES! FIVE HUNDRED NOT £600 AT ALL FOR SALE A310 £500 O.N.O
THE MICRO
VERY BIG PAGES
Oh I see, very funny! Now let's have my magnifying glass back!
sun (lightus vitalus)
The Safe Scientist
500 lb
Heavy!
How the univer was formed and why. Ma weight, energ
This month I'm looking at lenses —or should that be through lenses?
Cow (chewus cuddus)
lens a fiver...
why?
Anyway, did you know that lenses can change the direction of rays of light?
...to see me through the week!
Couldn't you think of a cornea joke?
They can focus light to a point, too!
?
He's gonna make a spectacle of himself
BUTT
BULLSEYE!
With HINDsight he should've seen that coming!
MAG

Scientist

LET'S COMPUTE!

Adjusting the focus

LET'S
COMPUTE!

Hello again. This month we are focusing on light. In fact we are looking at magnifying glasses and how they operate as lenses.

All the things we can see scatter light around. A few objects, like the sun or a light bulb, make their own light. Most, though, just reflect it and we can show this light as rays coming from the object.

Type in the lens program, save it and run it. You will see a lens in the middle of the screen. There are two small marks on the axis. These are called the Focal points and their distance from the lens tells you how powerful it is. To the left of the lens is an object – just a line – that keeps moving, but you can stop the movement by hitting Return.

When you do this a couple of rays are drawn from the top of the object, heading towards the lens – the clever thing about lenses is that they change the direction in which the rays travel. This can make the rays come together again and we can get an image at the place where the rays meet – the image is drawn for you.

As usual there are no answers from The Safe Scientist. This program shows accurately what a lens does and lets you investigate, here are some ideas to work on:

- Is there always an image?
- What happens if the object gets very close to the lens?
- What conditions are needed to get an image that is bigger than the object?

The program is simple but there are plenty of other things to do. It's a good idea to look at real lenses as well. You probably have a magnifying glass at home – I got one in a cracker last year.

Or you could use an old pair of specs from someone who is long-sighted. See if you can produce real images on a piece of paper. Find out how you have to use them to create a magnifying glass.

One final thing – the National Curriculum. This program lets you work on just about any level from three upwards.

- *That's about it for this month. Next time it'll all be elementary as we get down to fundamental particles.*

```
 10 REM > <Basicsave$dir>.Lenses
 20 REM by The Safe Scientist
 30 REM (c) The Micro User
 40 X=-500:REPEAT
 50 MODE4:VDU29,640;512;
 60 PROCaxis:PROClens
 70 PROCobject:PROCrays
 80 UNTIL0:END
 90 DEFPROCaxis
100 MOVE-640,0:DRAW640,0
110 MOVE200,5:DRAW200,-5
120 MOVE-200,5:DRAW-200,-5
130 ENDPROC
140 DEFPROClens
150 MOVE0,-512:DRAW0,512
160 PROCcurve(-2000,2690)
170 PROCcurve(3280,2690)
180 ENDPROC
190 DEFPROCcurve(c%,r%)
200 VDU29,c%;512;:MOVE0,r%
210 FORN=0TO360STEP5
220 DRAWSINRADN*r%,COSRADN*r%
230 NEXT:VDU29,640;512;
240 ENDPROC
250 DEFPROCobject
260 PRINTTAB(0,21)"Press Return"TA
B(0,22)"to set object"
270 REPEATPROCmoveobject:UNTILG=13
280 ENDPROC
290 DEFPROCmoveobject
300 PROCmove:G=INKEY(200)
310 ENDPROC
320 DEFPROCmove
330 GCOL0,0:MOVEX,0:DRAWX,100
340 X=X-100:IFX=-700 X=-100
350 GCOL0,1:MOVEX,0:DRAWX,100
360 ENDPROC
370 DEFPROCrays
380 V=ABS(X):IF V=200 F=201 ELSE
F=200
390 U=(F*V)/(V-F)
400 IF V<>200 H=-U/V*100 ELSE H=
U/V*100
410 MOVEX,100:DRAW0,100:DRAWU,H
420 MOVEX,100:DRAW0,0:DRAWU,H
430 MOVEU,0:DRAWU,H
440 PRINTTAB(0,21)"Press Space"S
PC1TAB(0,22)"to continue"SPC3
450 REPEATUNTILGET=32
460 ENDPROC
```

Get it right ✓

```
 10 =    0 0    170 =  152 3
 20 =    0 0    180 = ED0F E
 30 =    0 0    190 = FD42 0    330 = 2C78 5
 40 = 8E63 3    200 = 3FC7 9    340 = 255A 3
 50 = E3AA 5    210 = 55B7 9    350 = 691B 4
 60 = 6E5E 6    220 = 3240 0    360 = ED0F 7
 70 = CD08 7    230 = EEF9 0    370 = 6E51 4
 80 = 741E A    240 = ED0F 3    380 = E87C D
 90 = 30AB A    250 = C936 2    390 = 7175 A
100 = C823 B    260 = 5C85 9    400 = A639 B
110 = C0D7 7    270 = 46D2 A    410 = 5529 F
120 = 34EA E    280 = ED0F A    420 =  D57 3
130 = ED0F 2    290 = 78D8 B    430 = 6B98 D
140 = 9188 7    300 = C56A 4    440 = 5043 D
150 = 3D8C 9    310 = ED0F 1    450 = 5B81 F
160 = 5D77 0    320 = D8D0 0    460 = ED0F B
```

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96a Vauxhall Street, Norwich NR2 2SD. Phone: 0603 766592, Fax: 0603 764011

Computer Holiday for young people!!

Scripture Union runs a computer holiday for 13 to 16 year olds at an attractive school set in the Hertfordshire countryside. The dates? August 3rd to 11th. The price? £101. For details, write to Jim Maddox, S.U. Holidays, 69 Cloverdale Road, London SW2 2DH or phone 081 671 8761.

PINEAPPLE SOFTWARE

The Pineapple Colour Video Digitiser Big Price Reductions!!!

Since we originally introduced the Pineapple Video Digitiser almost two years ago we have not needed to modify the design of the hardware in any respects. However, the software has been continually improved to the point where the quality and quantity of software supplied is second to none.

Now, because of the large number of sales, we are able to offer a big price reduction which makes colour digitising available to everybody. Also, because we are so confident that you will find the Pineapple Digitiser superior to anything else available, we are happy to offer our Digitisers on 7 days free approval so that you can see for yourself the power of our software.

Some of the features of the Pineapple Digitiser, many of which are still exclusive are as follows:-

- ☆ 16 bit true R G B storage in 256k ram.
- ☆ Sequences of frames of a moving picture can be grabbed and stored in memory. Up to 30 frames in a 1 mb computer, 200-300 frames in larger computers!!
- ☆ Full screen area normally viewed on a TV set is grabbed in full.
- ☆ Images may be processed using our own high speed software routines or Acorn's ChangeFSI software.
- ☆ Quite simply the most powerful and easily used zooming and cropping routines available with any processing package.
- ☆ Two independent multitasking applications supplied. Non-multitasking software allows digitising without windows for adding still images to videos.
- ☆ Our hardware does not use interupts so other applications run at full speed.
- ☆ Latest software includes built in print routines. (Existing owners please contact us for a free update).
- ☆ Hard locking synchronising circuits for best results from video recordings.
- ☆ Available in a stand alone box for use with A3000. In this mode it can also be used with 300/400/500 series computers only occupying one expansion slot.
- ☆ Free seven day trial.

A300/400/500	£199.00
A3000/Boxed	£235.00

new Pineapple PAL/S-VHS Decoder new

The Pineapple PAL/S-VHS decoder converts any standard PAL TV signal into R, G, B and Syncs. This allows you to use your Archimedes monitor as a high quality display for a TV tuner (e.g. any VHS recorder), or video camera.

The unit can be switched between a standard PAL input on a BNC connector or an S-VHS input. The S-VHS facility allows a computer monitor to be used as a high quality S-VHS display unit.

The decoder may also be used as an S-VHS adapter for the Pineapple Video digitiser (or any digitiser with an R, G, B input).

The unit is very compact measuring only 4.25" x 2.25" x .75"

Price £79.00

Pineapple PAL Coder

The Pineapple PAL Coder is a stand alone unit which provides a coded video signal which can be recorded onto a VHS recorder or fed to a monitor with coded input.

The unit is inserted in the lead to the R G B monitor and provides an R G B output for the monitor together with a full specification PAL coded output. A second version provides a standard coded output but also provides an S-VHS output for improved quality recordings on S-VHS recorders.

Standard Version	£69.00
S-VHS Version	£79.00

BBC PCB Designer

The full auto-route facilities are available even on an un-expanded model 'B' computer. An Archimedes version is available as a free upgrade to existing BBC owners or at a similar price to the BBC version.

'PCB Auto-route is remarkable. No similar software comes near the price.'
Acorn User - August 88

Manual track routing	£55.00
Auto track routing	£85.00
Plotter Driver	£35.00

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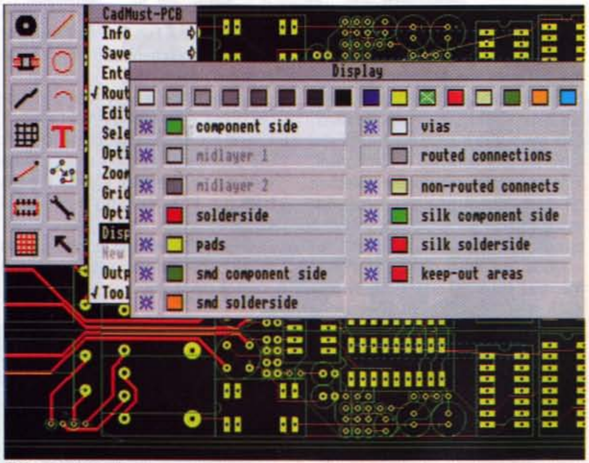
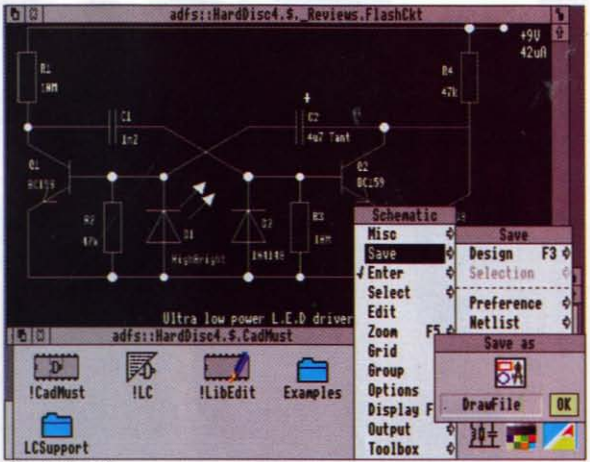
Access


CadMust-PCB
Info
Save
Ente
Rout
Edit
Sele
Opti
Zoom
Grid
Opti
Disp
New
Outp
Tool
Display
component side
midlayer 1
midlayer 2
solderside
pads
smd component side
smd solderside
vias
routed connections
non-routed connects
silk component side
silk solderside
keep-out areas

Fitting components


adfs::HardDisc4.$._Reviews.FlashCkt
+9V
42uA
R1
1M
R4
47k
C1
1n2
C2
4u7 Tant
Q1
BC159
Q2
BC159
R2
47k
D1
HighBright
D2
1N4148
R3
1M
Ultra low power L.E.D driver
adfs::HardDisc4.$.CadMust
!CadMust
!LC
!LibEdit
Examples
LCSupport
Schematic
Misc
Save
Enter
Select
Edit
Zoom F5
Grid
Group
Options
Display F
Output
Toolbox
Save
Design F3
Selection
Preference
Netlist
Save as
DrawFile
OK

Circuit schematic

Product: CadMust
Price: £279 (Schematic) £379 (PCB)
Supplier: Lindis, PO Box 10, Halesworth, Suffolk IP19 0DX.
Tel: 0986 85476
Requirements: Risc OS, 2Mb preferred

Making tracks

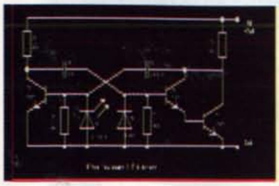
Terry Blunt checks out a professional PCB designer

CADMUST is a new PCB design package giving facilities for both schematic drawing and for design of multi-layer PCBs. Not only can the artwork be split up between a number of layers, but the silk screen printing can be on both sides of the board as well.

It consists of a boxed, ring-bound manual, with two discs in a plastic cradle. One disc holds the application, while the other contains support software, component libraries and example files.

When you double click on the !CadMust icon, instead of loading an application, a window opens on to two other icons: !PCB and !Schematic. These are the real applications that will load on to the icon bar.

Starting up either the schematic or PCB sections you are presented with a window showing a black background and an attached tools pane. I find the first thing I need to to do is increase the zoom factor to about 4:1. It's nice to be able to see the whole design at once, but with the default setting components are minute and text unreadable.



The schematic section operates basically in a similar manner to !Draw. Component devices are treated as whole objects and can be rotated in 90 degree steps or inverted. Connecting lines can be locked to 90 or 45 degree angles or free drawn. Text can be overlaid in any font but is of fixed scale, which is a pity.

Component libraries

CadMust is supplied with quite extensive component libraries. If you need a device type or package that is not included, there is an additional application that can be used to edit the libraries. You can either modify an existing device, or create a totally new one.

Although fully Risc OS compliant, CadMust, is a bit quirky in places. An example of this is the double check for unsaved work, when closing the window. Although quite correct, the wording seems a little odd. With most applications you are asked if you want to save your work, whereas CadMust asks you if you want to discard your work. This is potentially lethal.

PCB drawing follows similar lines to the schematic, but with the added distinction between connections, traces and silks. You also have control over the grid lock size. This can be very significant when using the auto-route feature. Set it too large and auto-routing will be impossible, too small and you run the risk of traces touching on the final artwork.

When you first form connections they will be a rat's nest all over the place. The auto-router will then sort these out, laying traces down to replace them, taking into account the number of board layers, proximity of other components and traces, and even areas that you set aside as *keep out*.

Connecting lines can also be grouped in different sizes so that the auto-router will select the correct trace width when laying them down.

Fixed copper traces such as power lines, along with screening copper planes, can be laid down in advance and the finished board can be smartened up with silk outlines and text. There is the addition of arc and circle drawing available for silks.

Copper pads of various shapes and sizes are available, both with and without component holes. Furthermore, there is a feature for vias – through board connections of traces from any layer to any other layer, or even all layers.

As well as positioning the devices themselves, you can usefully alter the position of their labels and reference numbers, or even omit them altogether. On a small board this is very necessary to avoid congestion. A nice touch is the auto-increment of reference numbers as you place devices of the same type.

Auto-routing

An irritating feature of the PCB editor concerns the movement and orientation of components already placed on the board. These are in different submenus, so there is a lot of menu selecting involved in dragging and rotating them. This is all the more curious when you consider that initial placing and orientation can be done together.

If you produce just a schematic diagram, CadMust can make a fair attempt at positioning and auto-routing components from an intermediate file, or netlist. However, this is obviously not as good as the results an experienced designer could produce.

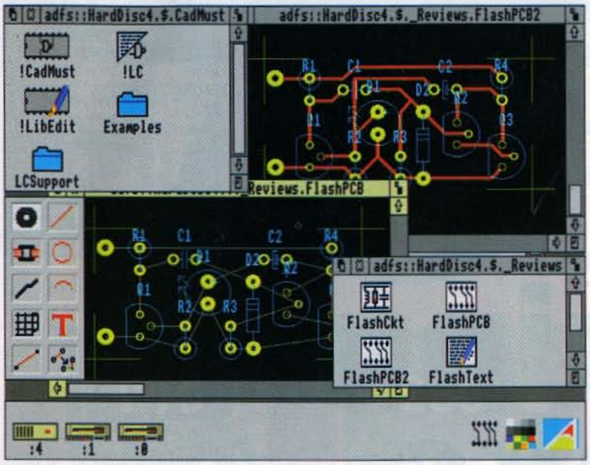
It seems that the smaller the board, the more difficulty CadMust has and the more likely it is to fail completely with a single sided board. The LED driver in the screen shots gave CadMust a lot of trouble when the board size was shrunk.

In the full release version there will

➤

be a component optimisation feature, which should help here. This wasn't available on the review copy. Another feature that will be provided, but that I have not seen, is the more or less essential drill output.

When you set up a new PCB you must know in advance how big it needs to be. This is not very convenient, particularly if you import a netlist. I would be much happier if there was a crop facility to trim off unwanted board space after placing components, although I suppose you could always ignore the corner alignment marks. As well as this, there seems to be no way to control the print area. A tiny board will still require a full sheet of paper.



CadMust PCB in action

When picking up components from the libraries the schematic shows both a text and a diagrammatic representation. The PCB section, however, only gives a text description until you have actually selected a component. This can make component selection rather tedious if, say, you forget just which diode type is which. Selecting by outline would be much easier.

Once you have designed a PCB the next essential is to actually produce the artwork. CadMust provides for both output to normal printer drivers at any reasonable scale and the release version will support plotter drivers too.

Any layer of the finished work can be output, with or without silk markings, in normal or reversed format. For the best results with an ordinary dot matrix printer you would probably do well to print at twice normal size then photo-reduce the finished artwork.

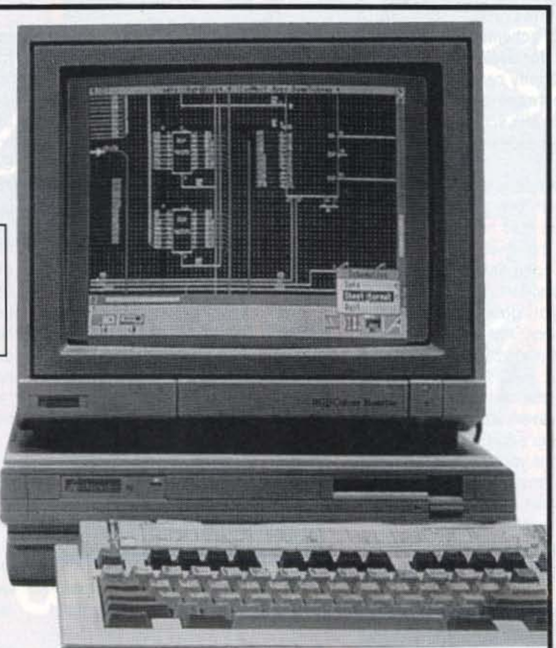
CadMust can also produce drawfiles of any board layer. This is particularly useful for incorporating drawings in DTP documents. Another useful feature is its ability to produce component lists of the complete design. These two features together make full documentation of a design extremely easy.

The program is very memory hungry. Even with a 2Mb Archimedes, it turned out to be impractical to work the schematic section side-by-side with the PCB maker – even though both are fully multi-tasking. This I found to be rather annoying. However, the problem is alleviated to some degree if you use a reduced component library.

Summing up

CadMust is an expensive piece of software but performs well, working with the Desktop rather than against it as some packages do.

Complete circuit and PCB design is perfectly feasible, given at least a 2Mb machine. But because of its price I can only recommend it for heavyweight use. Most of the problems I had were a matter of details. If these are improved, using the package will become easier and more natural.



CadMust is a multi-tasking CAD System for the design of electronic circuits, operating in the RISC OS environment.

The package comprises two programs — PCB and Schematic, both of which serve a wide range of output devices — from simple dot matrix printers to Gerber photoplotters.

Computer Aided Design for Electronic Circuits

Optimizing and autorouting tools — for ideal component placement and multi-layer design — are also included in the package.

Because of its low price but powerful performance, CadMust is suitable for production companies whatever the size and educational requirements.

CadMust programs run on all Archimedes systems (with RISC OS and a minimum of 1MB), the A3000 and Acorn Unix systems.

CADMUST

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A total turn-key CadMust solution can be obtained from the Sole Distributor:
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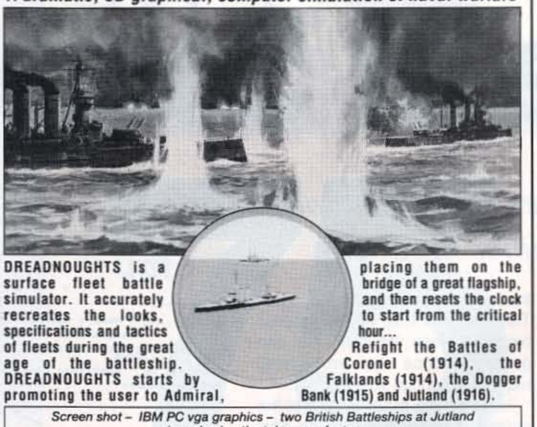
DREADNOUGHTS

A dramatic, 3D graphical, computer simulation of naval warfare



DREADNOUGHTS is a surface fleet battle simulator. It accurately recreates the looks, specifications and tactics of fleets during the great age of the battleship. DREADNOUGHTS starts by promoting the user to Admiral, placing them on the bridge of a great flagship, and then resets the clock to start from the critical hour...

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Screen shot – IBM PC vga graphics – two British Battleships at Jutland viewed using the telescope feature

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Programmer: Dr Peter Turcan – the author of Waterloo and Borodino

---

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The Scope of Sound

Mike Cook explores a new method of using his sampler hardware

LAST month we looked at how to drive our Sound Sampler from Acorn's 32 bit machines. This time we'll look at a completely different use for it. Basically the sound sampler is an analogue to digital converter with a filter on the front end, and we can use this to make a real-time oscilloscope.

The secret of a really good oscilloscope is responsivity – the display should really be alive. Then, once you have captured the data, it is very useful to be able to make accurate measurements on it. The heart of the program is the same Sample Acquisition Program we had before, only with some modifications.

Fast screen access

What we need to do is to gather a small buffer full of data under strict time control. Then this needs to be displayed and another buffer fetched. If this is done rapidly enough you will have the speed of a real oscilloscope.

Unfortunately the problem is the display side, as even using Risc machine code, drawing on the screen is not very fast using the standard screen drivers.

In fact it is slower than using direct screen access on the Model B. Now, having paid all that money for a superior machine we can't have it beaten by the standard Model B can we?

So what we have to do is to draw directly to the Archimedes screen memory, but where is it? Well, these Risc computers have two areas of memory. One is the physical area, where the same address always accesses the same part of the same chip. The other is the logical area where different chip locations can be switched in under control of the memory manager software.

It is in this area that your programs normally run. In fact, you can't access the physical area outside the supervisor mode without getting the dreaded *Abort on data transfer* error message. Fortunately these computers use a trick of holding the screen memory at the boundary between the two areas. The reason is that, as they appear twice so close together, you can greatly reduce the processing required to perform scrolling.

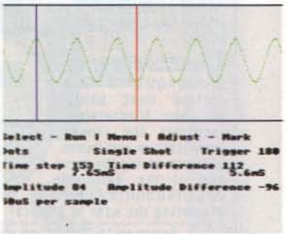
Due to a technical hitch both the 8-bit and 32-bit oscilloscope software have been omitted from this month's subscription disc. But they will be available on next month's.

However, the exact location of the screen memory depends on how many pages have been allocated to it, but it always ends up on the boundary at address &2000000. The system call OS_ReadDynamicArea will give you the size devoted to screen space and by subtracting this from the boundary you have the address of the screen memory.

Acquiring the data

The next thing you have to know is what screen mode you are using as this affects the way that the memory addresses relate to the screen pixels. I wrote the program to use Mode 9 which has 320 pixels in the X direction. Each byte holds two pixels so there are 160 bytes between successive screen lines.

The built-in machine code multiply instruction makes the calculation of an address from a pixel coordinate quite easy. In the listing this is shown in lines 2960 to 3220. This section reads the value in the data buffer and uses it as the Y value multiplying it by 160 to get the offset of the line address.



```
elect - Run | Menu | Adjust - Mark
ots              Single Shot     Trigger 180
ime step 153  Time Difference 112
      7.65mS                        5.6mS
mplitude 84    Amplitude Difference -96
0uS per sample
```

Then we add the absolute address of the start of the screen memory and finally we add the X value. This gives us the address of two pixels, the least significant four bytes are the right pixel and the most significant four bits are the left one. As we are scanning through all X values, and we always want to toggle the same bit, the program can be made much more streamlined than the built-in graphics routines.

On the acquisition side, the program has the option of using a trigger. That is, if a trigger value is set, the

```
   10 REM > <BasicSave$Dir>.!Run
   20 MODE9
   30 MSP%=9
   40 DIM CODE%&200, BP%&400,S1%(MSP%)
,S2%(MSP%)
   50 PRINTTAB(0,5)"THE BEEB BODY BUIL
DING COURSE"
   60 PRINTTAB(0,8)"By Mike Cook"
   70 PRINTTAB(0,10)"Sound Sampler Osc
illoscope"
   80 PRINTTAB(0,15)"You need the Soun
d Sampler for this"
   90 PRINT"Any key to continue"
  100 A$=GET$
  110 SPEED%=0:PROC_CSU
  120 SW%=1:T%=180
  130 MARK=FALSE:TRIG=TRUE
  140 JOIN=FALSE:Sing=TRUE
  150 SYS"OS_ReadDynamicArea",2 TO ,A%
  160 SP%=&2000000-A%
  170
  180 FORA%=BP%TO BP%+640:?A%=128:NEXT
  210
  220 *POINTER 1
  230 MOUSE RECTANGLE 0,500,1280,512
  240 PROC_SETUP
  250 GCOL 3,2
  260 LINE 0,760,1279,760
  270
  280 REPEAT
  290 PROC_LAB
  300 DP%=BP%+320*(SW%EOR 1)
  310 IF JOIN PROC_JOIN
  320 GCOL 3,1
  330 MOUSE LX%,Y%,B1%
  340 LINE LX%,508,LX%,1019
  350 REPEAT
  360 MOUSE X%,Y%,B1%
  370 IF X%<>LX%THEN
  380  GCOL 3,1
  390  LINE LX%,508,LX%,1019
  400  LINE X%,508,X%,1019
  410  LX%=X%
  420  PRINTTAB(10,22);X%>>2SPC3
  430  PRINTSPC(10);((X%>>2)*S2%(SPEED
%))/1000"mS"SPC3
  440  PRINTTAB(10,25);255-?(DP%+(X%>>
2))SPC3
  450  IF MARK THEN
  460   PRINTTAB(15,22)"Time Differenc
e ";(X%>>2)-MKT%SPC3
  470   PRINTTAB(32,23);(((X%>>2)-MKT%
)*S2%(SPEED%))/1000"mS"SPC3
  480   PRINTTAB(15,25)"Amplitude Diff
erence ";(255-?(DP%+(X%>>2)))-MKA%SPC3
  490  ENDIF
  500 ENDIF
  510
  520 IF B1%=4 PROC_SETUP:PRINTTAB(0,2
0)"RUNNING":PROC_RUN:PRINTTAB(0,20)SPC
7
  530 IF B1%=2 PROC_OPTIONS
  540 IF B1%=1 PROC_MARK
  550 UNTIL B1%=4 OR B1%=2
  560 UNTIL FALSE
  570
  580 DEF PROC_LAB
  590 PRINTTAB(0,18)"Select - Run | Me
nu | Adjust - Mark"
  600 FORA%=19 TO 28
  610 PRINTTAB(0,A%)SPC40
  620 NEXT
  630 PRINTTAB(0,27);S2%(SPEED%)"uS pe
r sample"
  640 PRINTTAB(0,22)"Time step"
  650 PRINTTAB(0,25)"Amplitude"
  660 IF JOIN PRINTTAB(0,20)"Joined" E
LSE PRINTTAB(0,20)"Dots  "
  670 IF Sing PRINTTAB(13,20)"Single S
hot" ELSE PRINTTAB(13,20)"Repetitive"
  680 IF TRIG PRINTTAB(28,20)"Trigger
";T%ELSE PRINTTAB(28,20)"Trigger OFF"
  690 ENDPROC
  700
  710 DEF PROC_MARK
  720 IF MARK THEN
  730  MARK=FALSE
  740  GCOL 3,4
  750  LINE MX%,508,MX%,1019
  760  PRINTTAB(15,22);SPC(24)
  770  PRINTTAB(17,23);SPC(22)
  780  PRINTTAB(15,25);SPC(24)
  790 ELSE
  800  MARK=TRUE
  810  MKA%=255-?(DP%+(X%>>2))
  820  MKT%=X%>>2
  830  MX%=X%
  840  GCOL 1,4
  850  LINE MX%,508,MX%,1019
  860 ENDIF
  870 PROC_EMPTY
  880 ENDPROC
  890
  900 DEF PROC_OPTIONS
  910 LINE X%,508,X%,1019
  920 PRINTTAB(0,27)SPC(20)
  930 PRINTTAB(0,20)"Options:-";SPC(30
)
  940 PRINT"T : Trigger ON/OFF V : Tri
gger Value"
  950 PRINT"S : Single shot  R : Repet
itive"
  960 PRINT"J : Join the dots  D : Sam
ple Dots"
  970 PRINT"+ : Increment Time - : Dec
rement Time"
```

The Beeb Body Building Course

program will loop until the sample read is greater than this value. In this way you can synchronise repetitive waveforms on the screen. The other change in this section of code is that the time delay between each sample is taken from memory locations that the main program can alter.

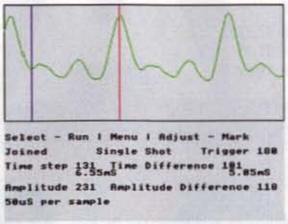
Let's see what it can do. When the program runs it is set up to use the trigger in single shot mode which means only one buffer of data will be captured.

To run the oscilloscope click with Select on the mouse and say something into the sampler. You will see the trace frozen on the screen and a red line following the mouse pointer. As you move the line over the trace you will see the amplitude and time from the beginning of the sample displayed for the current point.

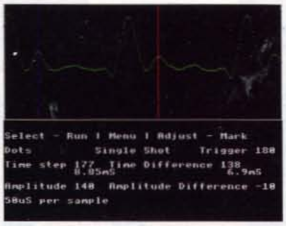
Join the dots

Now click with Adjust and a blue line will be left and you will also get a display of the difference between this line and the blue mark. In this way you can easily measure the time period of a waveform or the height of successive peaks.

Clicking with Menu will bring up a list of choices – click R for repetitive and then run the scope again. This time you will see a continuous waveform, triggered on the peaks of your speech. Hold down the spacebar to exit and choose the T option to turn the trigger off. Now when you run the scope you will see the lively display that comes from direct writing to the screen.



```
Select - Run | Menu | Adjust - Mark
Joined          Single Shot    Trigger 180
Time step 131   Time Difference 101
          6.55mS                5.05mS
Amplitude 231  Amplitude Difference 110
50uS per sample
```

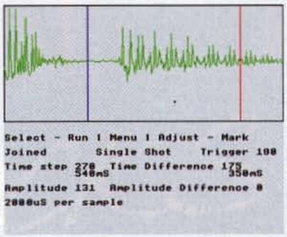


```
Select - Run | Menu | Adjust - Mark
Dots            Single Shot    Trigger 180
Time step 177   Time Difference 138
          8.85mS                6.9mS
Amplitude 140  Amplitude Difference -10
50uS per sample
```

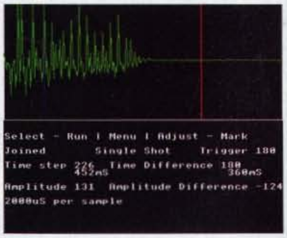
If you want to change any of the startup options these are to be found in lines 130 and 140. One option I have not mentioned so far is that to join the sample data dots. This is done in the analysis mode when the sample is being examined. This is very useful if you have not got many samples in the waveform period. Just using dots it is impossible to see this as a waveform. However joining them reveals the waveform clearly.

Finally, a point about the frequency response of this system. As it was meant for sound samples, it does not have a good DC response. The result is that if you look at square waves they will not have very flat tops. What you can do is modify the circuit to go directly in at the A/D converter and bypass the filter. The point you want to use is the junction of resistors R17 and R18 the 6K8 resistors.

● *Well, that's all for now, see you next month.*



```
Select - Run | Menu | Adjust - Mark
Joined          Single Shot    Trigger 180
Time step 270   Time Difference 175
          540mS                 350mS
Amplitude 131  Amplitude Difference 0
2000uS per sample
```



```
Select - Run | Menu | Adjust - Mark
Joined          Single Shot    Trigger 180
Time step 226   Time Difference 180
          452mS                 360mS
Amplitude 131  Amplitude Difference -124
2000uS per sample
```

```
 980 PRINT SPC(30)
 990 PRINTTAB(0,25)"Choice? ";
1000 A$=GET$:PRINTA$
1010 IF A$="J" OR A$="j" JOIN=TRUE:PR
OC_JOIN
1020 IF A$="T" OR A$="t" TRIG=NOT(TRI
G)
1030 IF A$="D" OR A$="d" JOIN=FALSE:P
ROC_DOTS
1040 IF A$="S" OR A$="s" Sing=TRUE
1050 IF A$="R" OR A$="r" Sing=FALSE
1060 IF A$="V" OR A$="v" PROC_TRIGV
1070 IF A$="+" OR A$="=" SPEED%+=1:IF
SPEED%=MSP%THEN SPEED%-=1
1080 IF A$="-" OR A$="_" SPEED%-=1:IF
SPEED%<0 SPEED%=0
1090 ENDPROC
1100
1110 DEF PROC_JOIN
1120 PROC_DD(5)
1130 ENDPROC
1140
1150 DEF PROC_DOTS
1160 GCOL 0,0
1170 RECTANGLEFILL 4,508,1270,508
1180 PROC_DD(69)
1190 ENDPROC
1200
1210 DEF PROC_DD(P%)
1220 GCOL 0,2:DX%=1
1230 PLOT 69,0,1019-(?DP%)*2
1240 FORA%=4 TO 1279 STEP 4
1250 PLOT P%,A%,1019-(?(DP%+DX%))*2
1260 DX%+=1
1270 NEXT
1280 ENDPROC
1290
1300 DEF PROC_TRIGV
1310 LOCAL t%
1320 REPEAT
1330 PRINTTAB(0,26)"Trigger Value bet
ween 128 and 230"
1340 PRINT"Current Trigger ";T%SPC3
1350 PRINTTAB(0,28)SPC(25)
1360 PRINTTAB(0,28)"Enter new value "
;
1370 INPUT t%
1380 UNTIL t%>127 AND t%< 231
1390 T%=t%
1400 ENDPROC
1410
1420 DEF PROC_SETUP
1430 CLS:CLG
1440 GCOL 0,7
1450 RECTANGLE 0,504,1279,516
1460 IF Sing AND TRIG PRINTTAB(0,18)"
Waiting for trigger" ELSE PRINTTAB(0,1
8)"Space to freeze";SPC(6)
1470 ENDPROC
1480
1490 DEF PROC_RUN
1500 *POINTER 0
1510 SW=1:MARK=FALSE
1520 FORA%=0 TO 640 STEP 4
1530 BP%!A%=0
1540 NEXT
1550 GCOL 3,2
1560 LINE 0,1019,1279,1019
1570 IF TRIG THEN ?TVAL=255-T%ELSE ?T
VAL=0
1580 !SPE1=(S1%(SPEED%) AND &FF)<<16
1590 !SPE2=(S1%(SPEED%) >> 8)<<16
1600 REPEAT
1610 PROC_SAMPLE
1620 PROC_DISPLAY
1630 UNTIL INKEY(-99) OR Sing
1640 PROC_EMPTY
1650 *POINTER 1
1660 MOUSE RECTANGLE 0,500,1280,512
1670 ENDPROC
1680
1690 DEF PROC_EMPTY
1700 REPEAT
1710 MOUSE X%,Y%,B%
1720 UNTIL B%=0
1730 ENDPROC
1740
1750 DEF PROC_DISPLAY
1760 A%=BP%
1770 B%=SP%
1780 CALL DISP
1790 ENDPROC
1800
1810 DEF PROC_SAMPLE
1820 G%=BP%+320*SW%:H%=320
1830 SW%=SW%EOR 1
1840 CALL SAMP
1850 ENDPROC
1860
1870 DEF PROC_CSU :REM CODE SETUP
1880 FORA=0 TO 2 STEP 2
1890 P%=CODE%
1900 [
1910 OPT A
1920 .SAMP
1930 MOV R0,#&18\UNUSED VECTOR NUMBER
1940 ADR R1,GS\ROUTINE TO CALL ON UNK
NOWN SWI
1950 MOV R2,#0\NUMBER TO PASS TO CALL
ING ROUTINE
1960 SWI "OS_Claim"\CLAME VECTOR
1970 SWI &80101\UNUSED VECTOR TO CALL
 READ IN ROUTINE
1980 MOV R2,#0
1990 MOV R0,#&18\VECTOR NUMBER
2000 ADR R1,GS
```

```
 2010 SWI &20\RELESE VECTOR
 2020 MOV R15,R14\BACK TO BASIC
 2030
 2040 .TVAL EQUD 0\TRIGGER VALUE
 2050 .SPE1 EQUD 0\LSB OF SPEED
 2060 .SPE2 EQUD 0\MSB OF SPEED
 2070 .GS\GATHER SOUND
 2080 TEQP R15,#&C000003 \DISABLE INTE
RRUPTS
 2090 MOV R0,#&3200000\BASE ADDRESS OF
 IOC
 2100 ADD R1,R0,#&50000\BASE OF PRINTE
R LATCH
 2110
 2120 \ HOLD FORTRIGGER
 2130 LDR R2,TVAL
 2140 CMP R2,#0
 2150 BEQ TRUN\SKIP THIS IF TRIGGER VA
LUE IS 0
 2160 .THOLD
 2170 MOV R2,#0\CHIP SELECT LOW
 2180 STR R2,[R1,#&10]
 2190 MOV R3,#&A\BITS TO READ IN
 2200 MOV R5,#0\COLLECT BITS HERE
 2210 .LOOP2
 2220 LDR R4,[R0,#&10]\GET DATA
 2230 MOV R2,#&10000\CLOCK HIGH
 2240 STR R2,[R1,#&10]\PUT OUT TO PRIN
TER
 2250 AND R4,R4,#1\MASK DATA BIT
 2260 MOV R5,R5,LSL #1\PREPARE R5 TO R
ECIEVE IT
 2270 ORR R5,R5,R4\MIX IT IN WITH R5
 2280 MOV R2,#0\CLOCK LOW
 2290 STR R2,[R1,#&10]
 2300 SUBS R3,R3,#1
 2310 BNE LOOP2
 2320 MOV R2,#&20000\CHIP SELECT HIGH
 2330 STR R2,[R1,#&10]
 2340 AND R5,R5,#&FF\MASK OFF START BI
T
 2350 \R5 NOW HAS SAMPLE
 2360 LDR R2,TVAL
 2370 CMP R2,R5
 2380 BLS THOLD
 2390
 2400 .TRUN
 2410 LDR R2,SPE2\T1 VALUE HIGH
 2420 STR R2,[R0,#&54]\T1 LATCH HIGH
 2430 LDR R2,SPE1\T1 VALUE LOW
 2440 STR R2,[R0,#&50]\T1 LATCH LOW
 2450
 2460 LDR R2,[R0,#&18]\GET IRQ MASK
 2470 ORR R2,R2,#&40\ENABLE T1
 2480 MOV  R2,R2,LSL #16
 2490 STR R2,[R0,#&18]\MASK REG
 2500
 2510 MOV R2,#&400000\CLEAR T1 INTERRU
PT
 2520 STR R2,[R0,#&14]\IRQ CLEAR
 2530 STR  R2,[R0,#&58]\GO T1
 2540
 2550 .TLOOP\DELAY LOOP FORTIMER T1
 2560 LDRB R2,[R0,#&10]
 2570 TST R2,#&40
 2580 BEQ TLOOP
 2590 MOV R2,#&400000\CLEAR T1 INTERRU
PT
 2600 STR R2,[R0,#&14]\IRQ CLEAR
 2610
 2620 \ TAKE ONE SAMPLE
 2630 MOV R2,#0\CHIP SELECT LOW
 2640 STR R2,[R1,#&10]
 2650 MOV R3,#&A\BITS TO READ IN
 2660 MOV R5,#0\COLLECT BITS HERE
 2670 .LOOP1
 2680 LDR R4,[R0,#&10]\GET DATA
 2690 MOV R2,#&10000\CLOCK HIGH
 2700 STR R2,[R1,#&10]\PUT OUT TO PRIN
TER
 2710 AND R4,R4,#1\MASK DATA BIT
 2720 MOV R5,R5,LSL #1\PREPARE R5 TO R
ECIEVE IT
 2730 ORR R5,R5,R4\MIX IT IN WITH R5
 2740 MOV R2,#0\CLOCK LOW
 2750 STR R2,[R1,#&10]
 2760 SUBS R3,R3,#1
 2770 BNE LOOP1
 2780 MOV R2,#&20000\CHIP SELECT HIGH
 2790 STR R2,[R1,#&10]
 2800 AND R5,R5,#&FF\MASK OFF START BI
T
 2810 \R5 NOW HAS SAMPLE
 2820 STRB R5,[R6],#1\PUT IT IN THE BU
FFER
 2830 SUBS R7,R7,#1 \DECREMENT BYTES T
0 GO
 2840 BNE  TLOOP\BACK UNTILL ALL DONE
 2850
 2860 \PREPARE TO EXIT
 2870 MOV R2,#&400000\CLEAR T1 INTERRU
PT
 2880 STR R2,[R0,#&14]\IRQ CLEAR
 2890 LDR R2,[R0,#&18]\GET IRQ MASK
 2900 AND R2,R2,#&BF\ENABLE T1
 2910 MOV  R2,R2,LSL #16
 2920 STR R2,[R0,#&18]\MASK REG
 2930
 2940 LDMFD R13!, {PC}\BACK FROM WHENS
T YOU CAME
 2950
 2960 .DISP\DISPLAY THE BUFFER
 2970 MOV R2,#0\X VALUE
 2980 MOV R5,#160\BYTES PER ROW
 2990 MOV R7,R0\SAVE START OF DATA BUF
FER
 3000 ADD R7,R7,#320\ADDRESS OF HALF B
UFFER
 3010 ADD R1,R1,#160\MOVE OFF TOP LINE
 3020 .DLOOP
 3030 LDRB R3,[R0],#1\Y VALUE
 3040 MOV R3,R3,LSR #1
 3050 MLA R4,R3,R5,R2\GET PIXEL OFFSET
 3060 ADD R4,R4,R1\REAL ADDRESS
 3070 LDRB R6,[R4]\GET PIXEL
 3080 EOR R6,R6,#&2\TOGGLE FIRST PIXEL
 3090 STRB R6,[R4]\PUT IT BACK
 3100 LDRB R3,[R0],#1
 3110 MOV R3,R3,LSR #1
 3120 MLA R4,R3,R5,R2
 3130 ADD R4,R4,R1
 3140 LDRB R6,[R4]
 3150 EOR R6,R6,#&20\TOGGLE SECOND PIX
EL
 3160 STRB R6,[R4]
 3170 ADD R2,R2,#1\MOVE ALONG THE X
 3180 CMP R0,R7\FINISHED ONE BUFFER
 3190 MOVEQ R2,#0\X VALUE FORNEXT PASS
 3200 CMP R2,#160\FINISHED?
 3210 BNE DLOOP
 3220 MOV R15,R14\BACK TO BASIC
 3230 ]
 3240 NEXT
 3250 FORA%=0 TO MSP%-1
 3260 READ S1%(A%)
 3270 S2%(A%)=S1%(A%)/2
 3280 NEXT
 3290 ENDPROC
 3300 DATA 100,140,180,220,320,640,128
0,2000,4000
>*check
```

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  10 =    0 0 |  360 = D0BA 1 |  690 = EDQF C | 1020 = EB61 3 | 1350 = BBFB 1 | 1680 = D1AD D | 2010 = 6558 1 | 2340 = A336 A | 2670 = 8CCB F | 3000 = E9D8 3
  20 = 6B32 2 |  370 = 4E35 F |  700 = D1AD 2 | 1030 = C704 F | 1360 = 5B40 F | 1690 = 5E6E 6 | 2020 = A179 0 | 2350 =    0 A | 2680 = B1FC 6 | 3010 = 9C15 B
  30 = 130D A |  380 = 38CB D |  710 = 88B5 7 | 1040 = 57F3 2 | 1370 = 37B5 E | 1700 = BFBA C | 2030 = D1AD 2 | 2360 = 902D B | 2690 = 84D2 7 | 3020 = 7AF0 5
  40 = B93B 1 |  390 = 8513 0 |  720 = 6550 1 | 1050 = FF9A B | 1380 = F80D 2 | 1710 = 82DA 5 | 2040 = 3815 3 | 2370 = 600A 7 | 2700 = FA71 7 | 3030 = E056 D
  50 =  6B8 4 |  400 = A8FD 5 |  730 = 1C25 D | 1060 = 86B8 5 | 1390 = 2091 0 | 1720 = 7C13 F | 2050 = 1890 E | 2380 = 7FD2 0 | 2710 = B1EB B | 3040 = 37C6 C
  60 = 91EE 4 |  410 = 89C2 A |  740 = 686E 0 | 1070 = 30E0 4 | 1400 = EDOF 5 | 1730 = EDOF 9 | 2060 = D0E5 E | 2390 = D1AD 3 | 2720 = FF04 9 | 3050 = 6029 4
  70 = 7C5C A |  420 = 8331 4 |  750 = 6AE4 E | 1080 = 65C3 B | 1410 = D1AD 8 | 1740 = D1AD E | 2070 = 630A 5 | 2400 = 1038 D | 2730 = 31A4 0 | 3060 = 5BB7 6
  80 = 9471 8 |  430 = EF28 D |  760 = 27EE A | 1090 = EDOF D | 1420 = 6CAA 6 | 1750 = 6789 F | 2080 = C12D 3 | 2410 = 203D D | 2740 = 5633 C | 3070 = B67B F
  90 = 9C6B 7 |  440 = C8D1 7 |  770 = 6A28 9 | 1100 = D1AD 6 | 1430 = 150C D | 1760 = 1889 2 | 2090 = 44B5 D | 2420 = 5214 F | 2750 = FA71 F | 3080 =  7DA A
 100 = 77F2 5 |  450 = 6550 9 |  780 = E0F6 3 | 1110 = 4DB5 0 | 1440 =  15D 8 | 1770 = A23A B | 2100 = D089 F | 2430 = 105E 9 | 2760 = E86B 1 | 3090 = C7F5 C
 110 = 1250 6 |  460 = 1C4C 9 |  790 = 18C0 3 | 1120 = A6A3 6 | 1450 = DEEB 3 | 1780 =  7A9 0 | 2110 = D1AD A | 2440 = 9ED0 C | 2770 = 595C 5 | 3100 = E056 7
 120 = 2D19 0 |  470 = 611C F |  800 = AF5E 1 | 1130 = EDOF 8 | 1460 = C37B 5 | 1790 = EDOF 6 | 2120 =    0 A | 2450 = D1AD 4 | 2780 = 6A00 E | 3110 = 37C6 4
 130 = DEB3 3 |  480 = D5E6 9 |  810 = 16AC 2 | 1140 = D1AD 7 | 1470 = EDOF E | 1800 = D1AD 6 | 2130 = 902D 1 | 2460 = DF23 7 | 2790 = FA71 9 | 3120 = 6029 6
 140 = 81E1 1 |  490 =  8E1 C |  820 = 61EF 2 | 1150 = 595C 9 | 1480 = D1AD 2 | 1810 = D373 1 | 2140 =  BC7 9 | 2470 = 5CE0 9 | 2800 = A336 A | 3130 = 5BB7 D
 150 = 3671 B |  500 =  8E1 2 |  830 = CC62 8 | 1160 = 71BA F | 1490 = 2C82 5 | 1820 = 5EDA D | 2150 = 3799 C | 2480 = 6B70 A | 2810 =    0 A | 3140 = B67B 8
 160 =  95B 9 |  510 = D1AD 0 |  840 =  60E 1 | 1170 = 80EF F | 1500 = DC9C C | 1830 = 58A9 3 | 2160 = B3BD C | 2490 = CBB9 4 | 2820 = A0F4 B | 3150 = 9CB4 A
 170 = D1AD C |  520 = 96AE C |  850 = 6AE4 F | 1180 = 9944 2 | 1510 = 8EBC D | 1840 = C4FE 0 | 2170 = 5633 7 | 2500 = D1AD 5 | 2830 = B52F 1 | 3160 = C7F5 9
 180 = A93C F |  530 = 13B4 6 |  860 =  8E1 E | 1190 = EDOF 2 | 1520 = A629 9 | 1850 = EDOF 1 | 2180 = FA71 E | 2510 = 765E 8 | 2840 = AEAF A | 3170 = E663 E
 210 = D1AD E |  540 = F8B3 B |  870 = C8A0 8 | 1200 = D1AD E | 1530 = 7789 C | 1860 = D1AD 0 | 2190 = 5252 9 | 2520 = 8ED4 3 | 2850 = D1AD B | 3180 = AD20 2
 220 = CCBD 8 |  550 = E5EC 0 |  880 = EDOF 9 | 1210 = DBEE 1 | 1540 = 2C83 8 | 1870 = 59BE B | 2200 =  71E 5 | 2530 = 78EB 6 | 2860 =    0 B | 3190 =    1 4
 230 = 595E 7 |  560 = 226C 0 |  890 = D1AD F | 1220 = F1DA C | 1550 =  8A8 C | 1880 = 8376 2 | 2210 = BCA8 7 | 2540 = D1AD C | 2870 = 765E 8 | 3200 = DB01 9
 240 = FA64 7 |  570 = D1AD 7 |  900 = 19E0 F | 1230 = E51E 6 | 1560 = F9B2 4 | 1890 = BFA1 1 | 2220 = B1FC B | 2550 = 7EAA D | 2880 = 8ED4 6 | 3210 = AF67 4
 250 =  8A8 D |  580 = 7ADB C |  910 = A8FD 5 | 1240 = 314A 8 | 1570 = FACD 1 | 1900 = EB9E 9 | 2230 = 84D2 C | 2560 = A585 9 | 2890 = DF23 A | 3220 = A179 0
 260 = 1711 6 |  590 = 4C2C 4 |  920 = CEE7 5 | 1250 = B007 5 | 1580 =  C01 8 | 1910 = DDA7 0 | 2240 = FA71 E | 2570 = 369D F | 2900 = 1618 5 | 3230 = 8B58 1
 270 = D1AD A |  600 = 6A66 B |  930 = 936A 2 | 1260 = D329 F | 1590 = 6E19 7 | 1920 = 2203 7 | 2250 = B1EB 7 | 2580 = 8B2F 6 | 2910 = 6B70 7 | 3240 = 2C83 B
 280 = BFBA 2 |  610 = E438 2 |  940 = 3B38 7 | 1270 = 2C83 0 | 1600 = BFBA 9 | 1930 = 5955 9 | 2260 = FF04 7 | 2590 = 765E F | 2920 = CBB9 6 | 3250 = 97B8 E
 290 = E4B7 1 |  620 = 2C83 3 |  950 =  1BC 6 | 1280 = EDOF 1 | 1610 = FE0C 2 | 1940 = F4BD C | 2270 = 31A4 B | 2600 = 8ED4 A | 2930 = D1AD 4 | 3260 = E5D7 C
 300 = D46A E |  630 = BF59 5 |  960 = 65D2 A | 1290 = D1AD 9 | 1620 = ED46 E | 1950 = 5633 E | 2280 = 5633 C | 2610 = D1AD 0 | 2940 = F9C6 7 | 3270 =  1DE 0
 310 = DC03 9 |  640 = CBFF 6 |  970 = 1DA3 1 | 1300 = 4511 7 | 1630 = 3680 3 | 1960 = AFC8 9 | 2290 = FA71 1 | 2620 =    0 0 | 2950 = D1AD 1 | 3280 = 2C83 7
 320 = 38CB 5 |  650 = 73C6 7 |  980 = B6FB B | 1310 = DADD 7 | 1640 = C8A0 B | 1970 = 6051 D | 2300 = E86B F | 2630 = 5633 3 | 2960 = E154 4 | 3290 = EDOF 3
 330 = 3E5A 3 |  660 = 6A10 3 |  990 = BF41 E | 1320 = BFBA D | 1650 = CCBD 4 | 1980 = 5633 B | 2310 = 693F A | 2640 = FA71 3 | 2970 = 5633 7 | 3300 =  44F 5
 340 = 8513 6 |  670 = AF49 7 | 1000 = 5451 7 | 1330 = F87F 4 | 1660 = 595E C | 1990 = 5955 E | 2320 = 6A00 A | 2650 = 5252 0 | 2980 = C438 6 |
 350 = BFBA 1 |  680 = 7ECF F | 1010 = 2E60 2 | 1340 = 1F0F 2 | 1670 = EDOF 4 | 2000 = F4BD B | 2330 = FA71 E | 2660 =  71E 3 | 2990 = 84D2 A |
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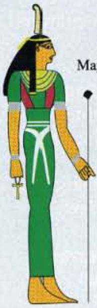
Disc 002 Flags of the world 200+ files (Colour)
Disc 003 General 100+ files
Disc 004 Christmas 100+ files (Colour)

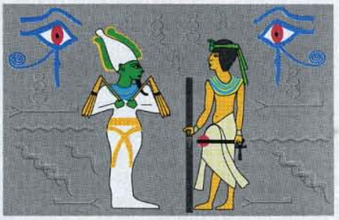
All artwork on the above discs has been drawn by Dave Hollett, Phill Crisp, and Mike Witkiss

Union Flag

Canada

General

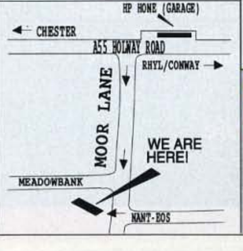

Mayet


Osiris Panel

Anubis

Where to find us

From Chester follow old A55 passed Holywell untill you see Moor Lane on your right turn down Moor Lane, we are at the bottom (Big White Farm Gate). From Rhyl/Conway (As Above) but turn left into Moor Lane



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THE GREAT MICRO USER READERSHIP SURVEY

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Would you like to improve the quality of what you read while helping a deserving UK charity ?

Now is your opportunity to influence the future content of The Micro User by taking part in our annual readership survey.

We will make a donation of £1 on your behalf to the Royal Marsden Hospital, London, one of the country's leading cancer hospitals, for every survey fully completed and returned to us.

The survey is designed to research your reading habits and purchasing plans so that we can be more in tune with your current and future information needs. All the information you supply will remain strictly confidential at all times and will be used only in statistical tables.

Section 1: Your computer

1. In which of the following places do you personally use or have access to a micro computer? Please tick all that apply.

☐ At work
☐ At home
☐ While travelling

2. What type of computer do you personally use at home and within your organisation? Please tick in both sections.

	At home 2a	In your organisation 2b
BBC Model A, B or B+	☐	☐
Electron	☐	☐
BBC Master	☐	☐
Master Compact	☐	☐
Archimedes A300/A400	☐	☐
BBC A3000	☐	☐
A5000	☐	☐
PC compatible	☐	☐
RML /Nimbus	☐	☐
Electron	☐	☐
Apple Macintosh	☐	☐
ST/Amiga	☐	☐

Other ....

3. How long have you used your current computer?

3a At home	3b At work
☐ Less than one year	☐ Less than one year
☐ Up to two years	☐ Up to two years
☐ Up to three years	☐ Up to three years
☐ Up to four years	☐ Up to four years
☐ Over five years	☐ Over five years

4. Is this your first computer at home ?

☐ Yes ☐ No

If no please state which one you owned before

....

5.Which of the following types of hardware are you personally likely to purchase in the next 12 months ? Please tick all that apply.

☐ BBC Model A, B or B+
☐ BBC Master
☐ Archimedes A300/A400
☐ BBC A3000
☐ A5000
☐ 286/386/486 PC
☐ RML /Nimbus
☐ Apple Macintosh
☐ ST/Amiga

Other ....

☐ Portable Computer

☐ Printer – laser
☐ Printer – dot matrix/inkjet
☐ Monitor – mono
☐ Monitor – colour
☐ Scanner/other I/O device

☐ Memory upgrade

☐ Joystick/trackball
☐ Modem/Fax
☐ Networking Equipment

6. On average approximately how much do you personally spend on each software purchase?

☐ Under £10 ☐ Between £10-15
☐ Between £16-30 ☐ Between £31-40
☐ Between £41-£50 ☐ Over £51

7. How regularly do you personally purchase software?

☐ Less than once a month ☐ One a month
☐ Two-three a month ☐ Three-five a month
☐ More than five

Section 2: About the magazine

8. How useful are the reviews in *The Micro User* when finding out about the latest hardware and software? Please tick the most applicable.

☐ Very useful ☐ Useful
☐ Not very useful ☐ Don't know/not sure

9. Which of the following types of articles are of special appeal to you in *The Micro User*? Please tick all that apply.

☐ Detailed hardware reviews
☐ Games/leisure software (Software Scene)
☐ Short hardware reviews
☐ Education
☐ Essential Archimedes
☐ Program listings
☐ News
☐ Comparative software reviews
☐ Software tutorials
☐ Specific software reviews
☐ Letters
☐ Short software reviews
☐ Body Building
☐ Basics of programming (Let's Compute)
☐ Technical hints/tips
☐ None/not applicable

10. How technical would you like the editorial in *The Micro User* to be? Please tick the most applicable.

☐ Very technical
☐ Not very technical
☐ Slightly technical
☐ Not at all technical

11. Which of the following supplements would you specially like to read in *The Micro User* in the next 12 months? Please tick all that apply.

☐ Networking
☐ Graphics/Presentations
☐ DTP
☐ Education
☐ Communications
☐ Games and leisure software
☐ Shareware
☐ Multimedia

12. Please indicate how often you look at or read each publication for information about computing?

	Almost always	Quite often	Only occasionally
Acorn User	☐	☐	☐
Archimedes World	☐	☐	☐
Archive	☐	☐	☐
Educational Computing	☐	☐	☐
RISC User	☐	☐	☐
The Micro User	☐	☐	☐
Times Educational Supp	☐	☐	☐

Other computer magazine..

13. How do you obtain your copy of *The Micro User*?

☐ Newsagent
☐ Colleague
☐ Subscription

14. Have you recently experienced difficulty in obtaining your copy of *The Micro User*?

☐ Every month
☐ Never
☐ Occasionally

15. How many other people read your copy of *The Micro User*?

☐ 1
☐ 3
☐ None
☐ 2
☐ More than 3

16. If you have ever responded to an advertisement in *The Micro User*, in which of the following ways did you respond? Please tick all that apply.

☐ Contacted supplier direct
☐ Used a coupon on the advertisement
☐ Recommended purchase to a business colleague
☐ None of these/not applicable

17. Which of the following types of software are you personally likely to purchase in the next 12 months? Please tick all that apply.

☐ Business (wp/spreadsheets/database)
☐ Accounts
☐ DTP
☐ Education – home
☐ Education – professional
☐ Games
☐ Graphics/Art
☐ Languages
☐ Music
☐ PC Emulator
☐ Utilities

Other..

18. Which of the following types of games do you find specially interesting?Please tick all that apply.

☐ Action
☐ Adventure
☐ Role Playing
☐ Puzzle
☐ War/strategy
☐ None

Other..

Section 3: About you

19. Which of the following best describes your job title? Please tick one of the following options.

☐ Chairman, MD, General Manager
☐ Board Director
☐ Non-board financial
☐ Office management/administration
☐ Scientific/production
☐ DP/MIS management
☐ Sales/Marketing
☐ Training Officer/Manager
☐ Training consultant
☐ Teacher/lecturer/IT advisor
☐ Student
☐ Self-employed/owner
☐ Retired

Other..

20. What is your age?

☐ Under 11
☐ 40-50
☐ 31-39
☐ 16-18
☐ 11-15
☐ Over 51
☐ 23-30
☐ 19-22

21. Please indicate age and numbers of children in the box provided

☐ Under 3
☐ 8-10
☐ 17-18
☐ 3-4
☐ 11-13
☐ 19-22
☐ 5-7
☐ 14-16

THE MICRO USER

READERSHIP SURVEY

22. Would you like to be considered for selection on to *The Micro User* reader panel to offer personal advice to the editor?

☐ Yes
☐ No

Section 4: Complete if you work in education or training

22. What level of responsibility do you personally have for the purchase of computer products and services within your organisation for education and/or training applications? Please tick all that apply.

☐ Consulted on requirements
☐ Specify products/brands
☐ Approve the purchase
☐ No involvement

23. Into which of the following bands approximately does your organisation's annual computer budget for education and/or training fall? Please tick the most applicable.

☐ Un,der £5,000
☐ £10,000 – £24,999
☐ £5000 – £9,999
☐ Over £25,000

24. How many people work in your organisation?

☐ 1-9
☐ 100 – 199
☐ Over 500
☐ 50-99
☐ 25 – 49
☐ 10 – 24
☐ 200 – 499

25. During what periods of the year does your organisation purchase computer products? Please tick all that apply.

☐ Jan – March
☐ April – June
☐ No specific time
☐ July – Sept
☐ Oct – Dec

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Thank you for completing this survey. Please return it (or a photocopy) to:

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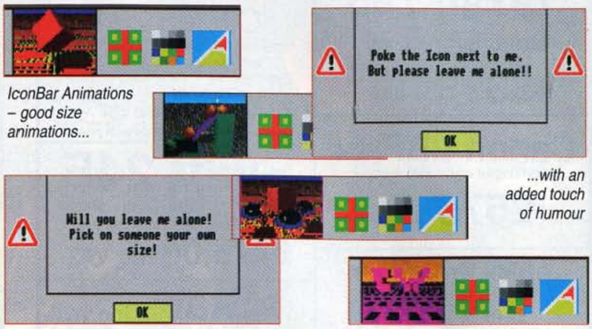
Mad as a hatter

Teri Paul assesses the brightest and best in the world of PD

WITH the increasing market in Australia and New Zealand – and the growing number of excellent programmers from that locale making their names on the Archimedes, it is not surprise that PD is alive and well Down Under.

Archimedes readers in the Antipodes can now obtain PD from a more local source – The Australian Archimedes Public Domain Library.

They have over 200 PD and shareware discs available and are associated with APDL here. Disc costs vary but start at $10. Further details can be obtained from OZWord, PO Box 1030 Parramatta NSW 2150.


Poke the Icon next to me.
But please leave me alone!!

Will you leave me alone!
Pick on someone your own
size!

IconBar Animations – good size animations...

...with an added touch of humour

More Archie bits

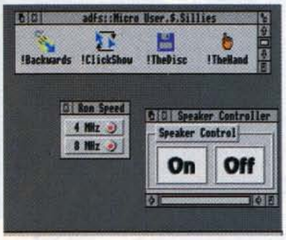
As promised last month, here are some more of Dave Thomas creations. Starting with the ridiculous, he has produced a collection of sillies.

These include a program called !Backwards which is guaranteed to send anyone up the wall. ClickShow, The Disc and The Hand all alter the shape of pointer when a mouse button or key pressed. I should think it's a good way to make someone well and truly paranoid.

Moving on to the sublime you'll come across TurboRoms. This is a utility which aims to increase the rom access time from 4MHz to 8MHz – replacing *RMFaster, for instance. A 25 per cent increase is to be expected, but A540 users won't be able to use it should they want to. Speed isn't increased until the utility is opened and the 8MHz button selected.

If you like to listen to music while you work, there are hundreds of excellent sound samples to choose from. However, if you share an office, your taste in music might well put a strain on working relationships. So all you have to do is plug in a set of ear or headphones and tap out F12 followed by *SPEAKER OFF.

A neater solution is SpeakCtrl. Loaded on to your icon bar you open it and select on or off. You can leave the window there or get rid of it. All programs are available from PD libraries or you could contact Dave Thomas directly at 20 Roseberry Avenue, Waterloo, Liverpool L22 2BH.



A Dave Thomas selection

Yet more ...

Wrapper and Wrong Way found their separate ways on to my Archimedes screen recently. The former is a nice little utility which allows the pointer to wrap around the screen so that you can get to the other side without running out of mouse mat or table.

Wrong Way comes from the same stable as Drunk and other such sillies. Mirroring the text, it is easy to revert to the original – just double click the icon again. It's a vast improvement on Drunk, as trying to turn the program off is enough to drive anyone to the bottle.

Quite a lot of programs have appeared recently with no copyright message or clue as to the author. As a rule of thumb, though admiring most of these programs, I do assume that they are copyrighted. One in particular which caught my eye was a program called Windows.

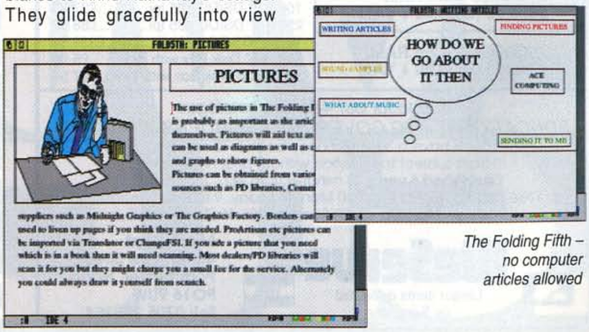
Put your Archie into Mode 15 and start the program. Over your desktop come three windows containing three sprite files: A vulture, a table and one with a more than passing resemblance to Anne Hathaway's cottage. They glide gracefully into view changing size and position as they go.

This is a program with definite potential for presentations, but there is no facility to change the pictures easily. I would like to know its antecedents, so if anyone out there recognises the program, please drop me a line.

Extra, Extra

Ian Hallsworth is responsible for the new Hermsoft label. His initial disc contained a copy of a new PD non-computer disc-based magazine created using Genesis. Called The Folding Fifth, it is in its infancy and not as pretty as some, and Ian really should use a spelling checker. However, it's nice to see Genesis used in this way, and the magazine should improve with time.

So if you feel the need to write anything which isn't computer related, send your Text, Draw, Sprite or Maestro files to Ian. Copies can be obtained from a range of PD libraries or from Hermsoft, 40 Alderbrook Close, Rolleston, Staffs DE13 9AH for £1.



The use of pictures in The Folding F
is probably as important as the artic
themselves. Pictures will aid text an
can be used as diagrams as well as c
and graphs to show figures.
Pictures can be obtained from vario
sources such as PD libraries, Comm
suppliers such as Midnight Graphics or The Graphics Factory. Borders can
used to liven up pages if you think they are needed. ProArtisan etc pictures can
be imported via Translator or ChangeFSI. If you see a picture that you need
which is in a book then it will need scanning. Most dealers/PD libraries will
scan it for you but they might charge you a small fee for the service. Alternatly
you could always draw it yourself from scratch.

The Folding Fifth – no computer articles allowed

From the abyss

Chris Wood sent me a rather good discful of programs this month. As a self-confessed icon bar junkie, I was immediately hooked by the Icon Bar Animation 4.5. As you would expect, this loads on to the icon bar and some very nice animation sequences – using Render Bender and Delta Animator – then take place under your very nose.

You can choose between the Box, Slope, Twirl and CW animations or add your own. Use the mouse to click on the icon bar icon – I'll let you discover the result. The program will only run in Mode 15, though if you want it to work in other modes you can get the Colour Trans module to translate the colours.

Written in Basic, it does tend to flicker a little but it is not really noticeable. To add your own animations they will need to be 82 pixels wide by 34 pixels high and named Spare-1 – the program also expects 10 sprites in the file. There is an option in the selection sub-menu already set up for this, so no programming changes are needed. Abyss Software can be contacted at 35 Grantley Crescent, Kingswinford, West Midlands DY6 9EH.

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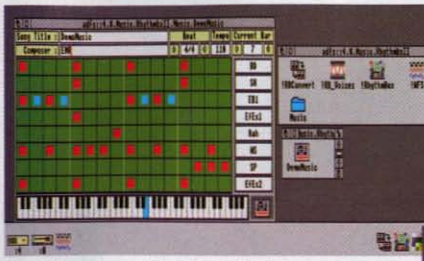
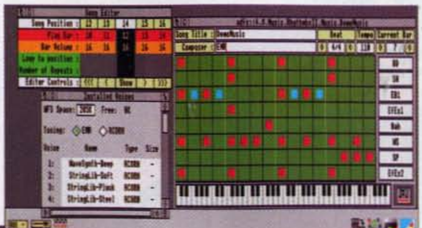
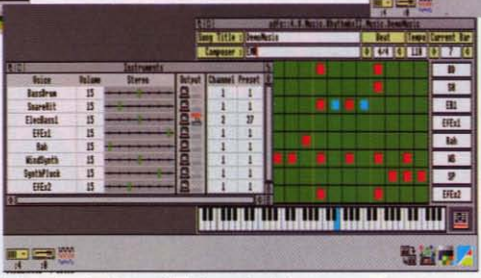


The keyboard is a useful and interesting feature

Product: Rhythmbox II
Price: £25.49
Supplier: ElectroMusic Research,
14 Mount Close, Wickford,
Essex, SS11 8HG.
Tel: 0702 335747
Requirements: Risc OS



Accessing the Song editor



Information at a glance – the intruments window

Ian Waugh beats out time with EMR's latest

I got rhythm, I got music...

ALL good programs deserve a sequel. EMR's Rhythmbox appeared over two years ago and it has now been completely re-written to run under Risc OS and many new enhancements have been added.

Although it may have started life as a drum machine/rhythm programmer, it is actually capable of far more sophisticated functions. It can create complete pieces of music in a similar vein to SoundTracker programs.

The program is not copy-protected – 10 out of 10 here EMR – but you have to enter your name and registration number which are saved into the program before running.

The package includes a function key strip and a tiny manual written in tiny print – cheaper than a NHS eye test – and although operation is fairly straightforward there are no diagrams.

There are several files on the disc: Rhythmbox II, !WFS – EMR's waveform filing system – voice samples, a piece of excellent demo music and a file converter to convert Rhythmbox I files to Rhythmbox II files.

Rhythmbox works at two levels. First you compose individual bars of music, then you link them together in the Song editor to produce a complete work. Bar mode shows a 16 x 8 grid, the eight rows each capable of holding one sample. Each bar can have a different set of eight samples so the potential is considerable although you are limited to working with a maximum of 32 samples at the same time.

The names appear to the right of the grid but if they are more than seven characters long they are abbreviated, sometimes to two-characters, which is not particularly helpful.

Down to it

The first step is to load some sounds into the WFS. These load on the left of the icon bar and pressing the select button shows 32. The first nine are Acorn's built-in ones which you can't delete. However, these use a different tuning base to the EMR samples and you can select either tuning base. The manual suggests you don't use the two together. In addition 20 EMR samples are supplied.

Each bar can have its own tempo and you can reduce the number of steps in each bar from 16 down to one. Notes are entered on to the grid simply by clicking on a square which puts a red box in it. Right clicking removes the note.

Clicking twice on a square turns the box blue and activates Note Off which switches off the note at the end of its duration. This is necessary to turn off samples which may have been set to loop or notes which are playing via Midi.

Pitching for samples

The keyboard below the grid is used to set the pitch of the notes. It also shows which pitch each note is set to as you pass the pointer over the grid. You can add a pitch offset if you are using a sample which was not recorded at Middle C. Samples need not be a simple one-note sound, they could be a one-bar rhythm track or a vocal line.

The Instrument window shows the eight samples for the current bar along with associated volume, stereo position, Midi channel and preset as well as output – Arc's speakers and/or Midi. These can all be altered in the Instrument window. While for stereo play, you have to run the output through a hi-fi system or stereo speakers.

You can also copy note, tempo, voice and volume data between bars and transpose individual bars. There are mask functions which protect rows from playback and edit functions such as transpose.

It's all very well to give the user a choice but three different combinations of keypresses setting the mask, releasing the mask and toggling the mask? Unnecessarily complex, I think. And why can't you set the mask with the mouse? The function keys can also be used to select various windows which *is* useful.

The Song editor has room for 255 entries. At each position you enter the bar number that is to play, its volume, a loop setting and number of repeats.

Theatre Play mode pauses between bars to allow Rhythmbox to be used as a sound effects generator, ostensibly for theatrical productions. I suspect a good old cassette player will ultimately be more versatile, even if it means recording Rhythmbox parts on to it.

Scrolling through the bars is slow although you can type in a bar number directly. I suspect few people will use more than a couple of dozen bars at most, anyway. During play, accessing the menu can lock you out until the program's interrupts decide to let you back in.

Screen updates can be very slow, too, although it runs faster in Mode 12 than 16. The manual includes a page of Things To Try which newcomers especially will find useful.

Summing up

Essentially, Rhythmbox is a version of the numerous Soundtracker programs available on the Archimedes and other computers. Its lack of a numeric event list entry system, however, makes it rather more friendly than your average tracker program. You can use it to create anything from rhythm parts to complete sample-based songs, albeit without some of the frills.

However, samples must be in WFS format so you can't drag just any sample into the system, although if you stick to EMR samples – and lots are available in EMR's Creations series – the process works very well. It's comparatively cheap, too.

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Daytime telephone number in case of queries...

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PHONE ORDERS: 0625 878888. FAX ORDERS: 0625 879966

Digital clock

Jon Millington shows how to turn your micro into a clock

THE BBC B, B+ and Electron don't have a real-time clock as standard so it's an interesting task to provide one. Luckily for us it's also fairly easy because Acorn have provided easy access to a built-in timer.

Type in the listing shown below and make sure you've made no typing errors using the checksums.

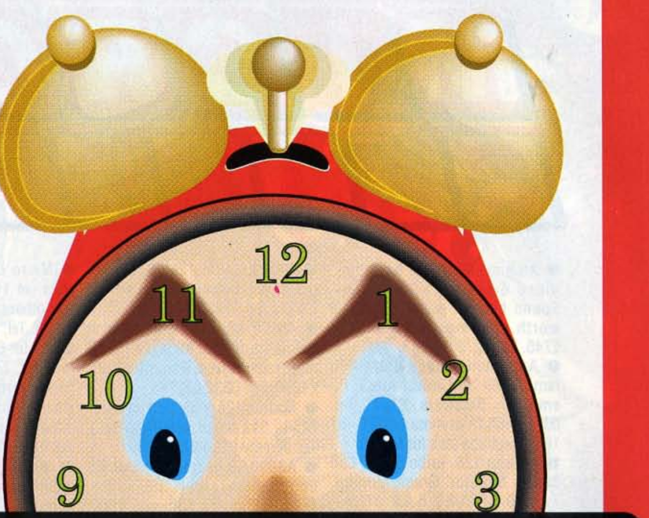
When it's run, the first thing you're asked for is whether you want a 12 or 24 hour readout. This option makes the task a little bit trickier, but not much.

Next you need to enter the current time in hours, minutes and seconds.

For testing purposes it's worthwhile to use 12 hours 59 minutes and 50 seconds for the 12 hour clock, and 23 hours 59 minutes and 50 seconds for the 24 hour one. As soon as you enter the seconds, a digital clock will be displayed and it will continue to run indefinitely. If you are using an Electron, leave out lines 40, 260 and 280.

Variables

T	Is 1 or 2 for a 12 hour clock, and 3 or 4 for the 24hour one.
H, M, S	Are the time in hours, minutes and seconds.
L	Is 12 or 24 depending on the selected clock.



Program breakdown

Line number	Action
40	Selects Mode 7.
50	Asks you to say whether you want the 12 or 24 hour clock.
60	Accepts only a or b as an answer.
60-70	Enables you to enter the time.
100	Gives *L* the value of 12 or 24 depending on *T*.
110	Clears the screen and switches off the cursor.
120	Sets the micro's internal timer to the time you entered.
140-290	Is the loop to keep the program running until you press Escape or Break.
150-180	Reset *H*, *M* and *S* to the current time.
200-240	Constructs a string containing the current time.
210	This prepares the hour as a string, if the hour has only one digit a space or a zero is added to the front of it.
260-280	Prints the time in double height.

```
10 REM Digital Clock (12 or 24 Hour)
20 REM by Jon Millington
30 REM (c) The Micro User
40 MODE 7
50 PRINT'"Enter: a) 1-12h or b) 0-24h
 (a/b)?";
60 REPEAT T=INSTR("AaBb",GET$):UNTIL
T>0
70 INPUT'"Give time now"''"Hours? "H
80 INPUT'"Minutes? "M'"Seconds? "S
90 :
  100 IF T<3 THEN L=12 ELSE L=24
  110 CLS:VDU 23,1,0;0;0;0;
  120 TIME=100*(3600*H+60*M+S)
  130 :
  140 REPEAT
  150 H=(TIME DIV 360000) MOD L
  160 IF T<3 THEN H=H+1
  170 M=(TIME DIV 6000) MOD 60
  180 S=(TIME DIV 100) MOD 60
  190 :
  200 t$=STR$(H)
  210 IF LEN(t$)=2 ELSEIF T<3 THEN t$="
"+t$ ELSE t$="0"+t$
  220 m$=RIGHT$("0"+STR$(M),2)
  230 s$=RIGHT$("0"+STR$(S),2)
240 t$=t$+":"+m$+":"+s$
250 :
260 FOR Y%=11 TO 12
270 PRINTTAB(14,Y%)CHR$(141)t$
280 NEXT
290 UNTIL FALSE
```

Get it right ✓

```
 10 =    0 0      190 = 9719 5
 20 =    0 0      200 = 6DAB A
 30 =    0 0      210 = E43B 4
 40 = 1092 2      220 = E8DC B
 50 = F943 D      230 = 9C8A 4
 60 = 60AA 6      240 =  3AB 8
 70 = 9ACC E      250 = 9719 0
 80 = A9B1 7      260 = E4BB B
 90 = 9719 1      270 = F9BC F
100 = D3DD 6      280 = 2C83 3
110 = 51DC A      290 = 226C E
120 = 77E2 6
130 = 9719 9
140 = BFBA A
150 = FBB4 0
160 = 4C06 7
170 = 9707 C
180 = 3C0B 9
```

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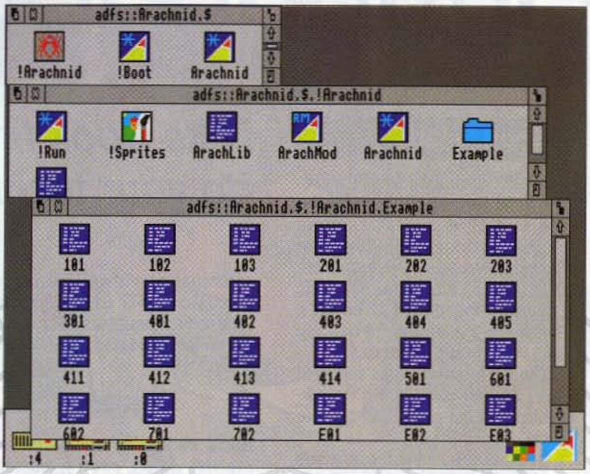

The Arachnid software

Terry Blunt discovers yet more ways for his Archie to take control

Webs of power

Product: Arachnid
Price: £100
Supplier: Paul Fray, Flint Bridge,
Ely Road, Waterbeach,
Cambridge CB5 9PG
Tel: 0223 441134
Requirements: Risc OS

THOSE familiar with Spider on the 8-bit BBC Micro will instantly recognise Arachnid for the Archimedes range, also from Paul Fray. Essentially it's an event driven programming utility for real-time control systems.

Instead of having to develop very complex counting and testing routines to cope with information coming to your program from different sources at unpredictable times, you simply break the program into two. In Arachnid's terms these are the watching and doing parts. Arachnid does the watching so that all you have to provide is the doing.

In this, you'll no doubt recognise a close resemblance to the wimp environment. Events are continuously monitored in a watching loop and when something happens – such as a switch closing – the program can be made to service this event immediately, then carry on as before. Again, like the wimp, events are queued so that they are all dealt with in turn.

Arachnid consists of a disc which includes quite a number of example programs, an extensive and detailed instruction manual and an anonymous black plastic box that plugs in-line with the user port.

Starting up

Double clicking on the Arachnid icon drops you into Basic, in Mode 3, with the !Arachnid directory currently selected. The routines that communicate between your program and the Arachnid module are an installed Basic library, so you mustn't quit or re-enter Basic formally as these would be lost.

When it starts up, Arachnid makes a check of the hardware to find out just what interfaces are available. It keeps a log of all those that it recognises and calls are provided so that your program can find out what it can use. This is necessary as you may not always be running the same micro or with the same expansions fitted.

The manual provides a highly detailed tutorial. Although a bit heavy going in places, it's essential reading. As it's a programmers' utility rather than a users' one, you won't get very far by just looking at the examples. There is a lot more to the package than you'd think at first sight. The example programs are simple to set up and worked correctly, both from disc and typed in from the manual. Though they look rather unfinished.

Control is arranged as a system of pipes. After an initialising call, you tell Arachnid which of its events are to be linked with which of your Basic functions. All your routines have to be set up as functions, as there is important information returned, including error trapping.

You can have a keyboard pipe linking to a text handler of some sort, and at the same time an analogue pipe linked to a routine that warns you that a threshold level has been reached. You can even set up a pipe for a timer that prints *Time for a cup of Tea* every hour and a half.

When all the pipes are set up your program drops into a wait procedure, which is effectively the end of your program. Arachnid will then continuously loop, waiting for input from any of the pipes set up.

Pipes can be modified by your routines on the running program, and can be killed or completely new ones opened. This means that your program can be self-modifying to a degree which opens up all sorts of interesting possibilities.

Arachnid provides up to 256 timers, that can all be independently controlled. This reflects the importance of timing events in the real world and there is a correspondingly large range of routines dedicated to these timers.

The outside world

The events that Arachnid is most interested in are external ones, derived from the 1MHz bus, and the user and analogue ports. So you'll need to have the I/O expansion fitted if you want to make the fullest use of it. Having said that, Arachnid will also read the keyboard and the built-in serial port.

With the appropriate expansions added to the 1MHz bus, you can handle several A/D converters, serial ports or digital interfaces. These are also available from Paul Fray as a rack system. Some of the sub-systems are optically coupled, giving useful isolation in difficult environments.

The Archimedes' parallel printer port isn't used, which I found a little surprising, as most of the other interfaces are. It could have been usefully set up in a similar manner to the user port. Unlike the user port it would be present on all machines regardless of expansions.

By providing a packaged homogeneous solution to handling a wide range of data sources, programming within Arachnid is simplified. This allows you to quickly develop your control systems. However, programmers used to writing complete solutions in Basic will probably find Arachnid a bit strange at first. The apparent detachment of setting up pipes outside the working part of a program is somewhat reminiscent of Prolog.

The name Arachnid, gives a clue to the relationship with the older, BBC Spider. The two can work together.

As an example, it is very easy to envisage a pair of programs that has a BBC B sending control data to the user port and reading back analogue data from the A/D converter, the results being transmitted along the serial interface to an Archimedes. This micro could then be integrating the information with other data for storage or display, while reading keyboard responses and sending modifying information back down the serial link to the first machine.

I would think Arachnid could also fit well in robotics experimentation where, along with the wide range of possible sensor inputs, the flexibility of alterable piping looks particularly attractive.

As well as the Basic interface, Arachnid provides considerable low-level support for those wanting home cooking. This is in the form of some 13 SWIs, all well detailed in the manual. These are the calls used by the Basic part of Arachnid, so I expect that you could integrate them into equivalent C programs, or even ARM code.

The overall style of Arachnid tends to suggest experimentation and research rather than third-party finished products. The latter would be complicated by the fact that any software written for Arachnid would be difficult to market as a Turnkey product without copyright complications.

What is not immediately clear from the manual, is that it is possible to integrate Arachnid fully with the wimp as a multi-tasking application. Instead of using the wait procedure as is used in all the examples, you use the tick procedure inside a normal wimp polling loop. Provided you know how to set up an application and handle Basic libraries, you should have no real problems.

Summing up

Arachnid is a well designed package ideally suited to rapid development of effective control solutions. However, I would have liked to have seen clearer details on how to set it up as a full multi-tasking wimp application.

PROBLEM

Mike Cook finds the answers to your technical questions

On the agenda...

- Dodgy dongle
- I^{2}C bus
- Body building book
- Cassette trouble
- Digitiser domiciled
- Stepper motor
- Cheap digitiser

Out in the cold

I WOULD like to know when, if ever, we of the 8-bit persuasion are going to see a book published containing a complete set of Mike Cook's Body Building articles intended for the B, B+ and Master?

As I can foresee that Body Building, which is good and educational is going to feature the Archimedes more and more. So how about one last book for us education users worldwide? **P. J. Elsey – Blackheath, London.**

● *I can assure you that the 8-bit machines are not being dropped in favour of the Archimedes. In fact there has only been one project – the I^{2}C interface – that is intended for the Archimedes alone.*

I hope to cover projects applicable to both classes of machine. However, the different interface capability and software requirements of the two machines may sometimes mean that some modifications will be needed.

As to a book, this would take quite a time for me to compile. Please flood me with requests if you think it worthwhile. However, an SAE will bring a complete list of all the articles and I can supply photocopies of any one for £1.00 – just contact Musbury Consultants who also handle the kits.

Got it taped

A SHORT time ago I bought a second-hand BBC Model B mainly for use as a word processor. It was already equipped with Computer Concepts Wordwise rom and Acorn DFS version 1.2 using the 8271 disc controller chip and OS 1.2. I bought a Panasonic printer and DS/DD disc drive from Watford Electronics.

The whole setup works very well and I am very pleased with the performance of the printer and the disc drive.

Being second hand the machine needed cleaning. On removing the lid I found that it was an early Issue 3 Micro with Basic Version I. Back to Watford for Basic II.

My problems started when I used the cassette filing system. When the tape starts running, the computer makes an audible click between the loading blocks of data and it's not from the loudspeaker. I assume that it is the cassette relay snapping open and closed.

Some software will load normally and then just stop loading. For example the prompt cursor will appear below the loading message and maybe the Bad program error. It seems to be an intermittent fault and can occur with different software tapes, though the clicking occurs all the time.

I am sure that it is not the software because it is BBC/Electron compatible and I have used it on an Electron for years. Can you help? – **A.D. Marks, Halesown, West Mids.**

● *Yes you guessed correctly – your mystery click is indeed the cassette relay. This is a now almost forgotten aspect of the old cassette system. What it should be doing is turning the cassette recorder on and off.*

Most commercial tape software consists of many different files or programs each chained in turn. This was mainly a software protection method. Sometimes these programs had to do some initialisation so there was a delay before the next one loaded. In these cases it is important that the tape recorder is turned on and off because if it is left free running, you could miss the start of the next file.

However, the cause of your problem is most likely to be the extra roms that are fitted. These grab memory on power up and most cassette software assumes that it has all of the memory to play in. You can try typing:

```
PAGE=&E00
```

before loading any tape as that can reclaim the extra memory. Alternatively, you could remove the DFS and the 8271 controller.

A bit of a problem

HAVING recently upgraded to a BBC A3000, I have continued to use WordWise+. But I am trying to get used to Impression II at the same time. However, after fitting Impression II's hardware device – dongle – into the printer socket I am getting gibberish on the printer when I use WordWise+. It's unbelievable, but consistent.

I phoned Computer Concepts but they didn't know of any problem. Yet it's definitely interfering with the A3000, the printer or the WordWise+ software. Can you help? Apart from removing the dongle when using WordWise+ or restricting myself to Impression II I can't think of a solution. – **Graham Conridge, Bedford.**

● *This is a problem of 'hunt the bits'. From the samples of printer output you sent me, I made a short list of some of the characters, what they should be and what the printer produced. I then added the Ascii code for each in binary and the problem stared me in the face.*

It's all about bit 6. This appears to be always a logic zero. Having found the culprit we now have to eliminate him. Computer Concepts have always been very careful to ensure that their dongle does not interfere with the normal operations of the printer.

So when they told you that they knew of no problem they were being honest.

But although there is no general problem, you are suffering from a specific one. There could be several possible causes of bit 6 always being

Devices and interfaces

I HAVE an A420/1 with an additional external and rather ancient 80 track Seiko 8640 floppy disc drive connected via the Watford interface. The drive works well but the majority of my software left over from BBC Micro days is on 40 track discs which the drive will not read of course.

Do I remember reading, some time ago, in ***The Micro User*** about a software device for double stepping an 80 track drive to read 40 track discs and will this work with the Archimedes?

Alternatively, it there anything I can do with a soldering iron? – **Christopher Bentham, Seaford, Sussex.**

● *The Body Building Pack 27 featured in the October 1985 issue is what you want. This is still available at £32 for the kit or £37 assembled. What made it expensive was not the electronics but all the pcb mounting switches, plugs and sockets.*

It will work with the Archimedes as I use it occasionally with my own setup. However, depending on the stepping speed of your drives you might have to slow down the step rate of the Archimedes when accessing these drives.

A possible alternative is ArcDFS by Dabs Press which will double-step when required. It will also read and write both Solidisk and Watford disc formats.

PROBLEM

Transistor curve tracer problems with the I^2C bus

AFTER seeing your first article about using the I^2C Bus in the May 1991 issue of *The Micro User*, I decided to have a go and ordered the kit.

I managed to get results with your fifth part Capacitor Investigations, but find that I cannot get the Transistor Curve Tracer program in part four to work properly. In use the colours run continuously vertically up the Y axis. I listed the program IIC_CAP as supplied on the September 1991 subscription disc and checked it against the listing in the magazine – they both agreed.

A friend with more computing knowledge than I checked that I had put the interface together correctly and then suggested that I should solicit your help. If you could suggest where I am going wrong, I would appreciate it. **R. Allon – Newcastle upon Tyne.**

● *The most probable cause of difficulty is not your interface board but the transistor circuitry. If you have a vertical line running up the Y axis this means you are measuring the current through the transistor but not the voltage developed across it.*

This could be due to the transistor being broken. Replace it with a resistor of about 33k, wired across where the collected and emitter used to be. If you get a diagonal line it was your transistor or the wiring of the base resistors that was at fault.

If not, make sure that you have placed the links on the interface board so that all the input channels are selected – in the S position – and remove your transistor test circuitry.

Then run the test programs in the June 1991 issue of ***The Micro User*** *to make sure that all the analogue channels are being read and all the digital outputs are working.*

a zero. First of all you could have a faulty dongle. Return this to Computer Concepts and request that they test it – tell them about bit 6 too.

If that is not faulty, it could be that your printer socket is making a connection to the computer but not the dongle – try swapping it for another. Finally, and not very likely, there might be a timing problem between your printer and how WordWise+ outputs to it.

House hunting

I BOUGHT the Body Building Digitiser in December and it works perfectly, but there is just one complaint. I find that the circuit bard with sockets, components and so on sticking out of it very annoying. I have had problems with parts snapping off through normal use though I have put them back.

Did you design a housing for it? If not could it be possible to acquire some sort of housing that will prevent parts of it from breaking? It would be very much appreciated. – **Patrick Cornwel, Ely, Cambs.**

● *I am not sure what components keep breaking off your board, but I wonder what sort of treatment you are giving them. The idea of the Body Building Course is to provide add-on gadgetry at a budget price. In fact if you have a well-stocked junk box or visit the Radio and Electronics shows it is normally possible to beat the advertised price.*

However, nothing adds to the cost of a project more than putting it in a box. The casing often costs more than the electronics you are putting in it. Add to that the cost of punching holes in the front panel and screen printing labels on the panel and it adds up to the cost of the equivalent commercial product.

Having said that, the Sound Sampler was designed with half an eye to putting it in a housing. The two jack sockets were mounted such that the screw rings round them could fasten the whole thing to an aluminium front panel.

Then all you need is a large hole to access the 6-pin din socket and possibly a switch and indicator LED if you have the battery option. If you go to your local branch of Tandy or Maplin, I am sure that you can find a box to house the sound sampler. But they are not cheap.

Looks interesting

I WAS very interested to read your article on the sound sampler and I have been wondering whether it is possible to build a cheap video digitiser for the Archimedes using the sample principle.

The lack of any commercial unit would suggest that it isn't, but I can't for the life of me think why not. It would have to be very slow if it could only sample at 11kHz – I work it out as about 25 seconds for a Mode 12 screen, assuming it takes two frames to digitise a column.

It would also need more than one output signal as the computer needs to be told about sync pulses, but these can be switched between using a few transistors and the spare output from the printer port. Is such a device actually possible or am I just grasping at straws? – **David Radford, Bolton, Lancashire.**

● *In theory if you can imagine it you can build it, but it is not always worth doing. The first problem is the 25 seconds it would take to digitise a picture acceptable? This would mean that the picture would have to be held very steady which would rule out most freeze frames on VCRs and leave only cameras. Over such a period the camera would have to be help on a tripod and even then there might be movement.*

Secondly due to the slow digitisation time compared to the video signal you would need a very good sample and hold circuit before the digitiser. This would have to have an almost impossible acquisition time or else the sample rate would need to be slowed further. Finally, synchronising with the sync pulses could be done with hardware, but again it adds to the cost and complexity of the circuitry.

Having considered all these things, you would not end up with a low-cost solution at all, and it would probably be cheaper to adopt another strategy.

I did build a video digitiser in the May 1987 issue which plugged into the user port.

This can be used with the Archimedes if it is fitted with a user port and I hope to publish the software when I get round to writing it. In the meantime BrainSoft sell an interface board that will allow a slow acquisition of a video signal.

Throw it

THE disc drive on my A310 recently broke and the repairers reported that the read/write chip on the motherboard had broken. But Acorn would only supply the whole motherboard not the single chip.

Is there a way of transferring files between Amiga, ST, PC and my Archimedes? My friends have access to these other machines and we would like to program between all the machines. – **N. Hemley, Lightwater, Surrey.**

● *The chip that controls the internal floppies in the A310 is the 1772-02. However, if your repair man is not willing to replace it then I would have no confidence in his diagnosis. Especially if he refers to this chip as the read/write chip as you report.*

However, I know that good repair men are hard to find. Some are reported to be charging £65 an hour, minimum one hour, with parts and carriage extra.

With this in mind I was pleased to hear that Norwich Computer Services are offering an economical repair service where they charge only for the work done. You can contact them on 0603 766592.

You can transfer between the Archimedes, PC and ST using the Multi-FS utility from Arxe systems at PO Box 898 (Ref MSF), Forest Gate, London E7 9HJ. They are working on an Amiga utility but due to the strange Amiga disc format this could take some time.

You could try linking your machines via the serial link and using communications software to transfer data. Or if your machines are not in the same room use a modem each.

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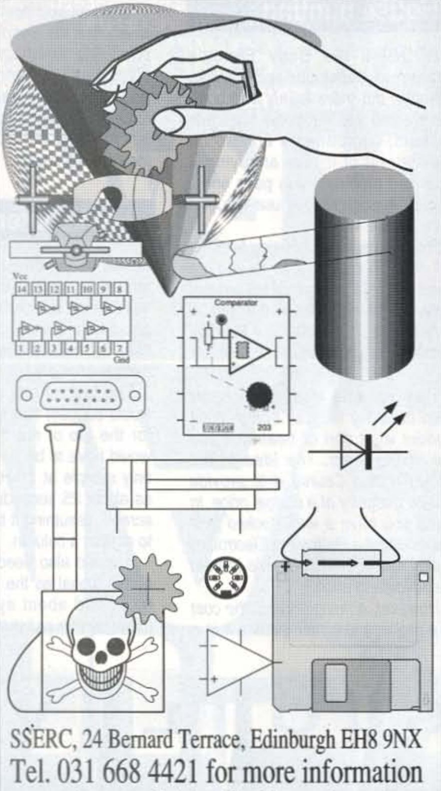

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In the beginning ...

Ian Waugh takes stock of the latest Wordwise Plus enhancements

WORDWISE Plus is unique in the world of the BBC Micro wordprocessor as it contains its own programming language, WPPL – Wordwise Plus Programming Language. WPPL programs load into Wordwise Plus segments that are activated by pressing Shift and one of the function keys.

Programs have been written in WPPL to perform every imaginable function, from mailmerging to random sentence generation. These two programs from Panda Discs are utilities aimed at users with little knowledge of computing.

+Catalogue

The manual calls +Catalogue an information and data retrieval system. In effect, it's a very simple database although it is more in the way of a list processing system. The differences will become clear in a moment.

It autoboots from disc by loading all the necessary programs into Wordwise Plus segments. The only time you actually enter Wordwise Plus itself is to enter and edit data. After editing, the Break key is used to re-enter +Catalogue. It's quite safe, as Wordwise Plus is remarkably stable, although pressing Break may adversely affect other rom images.

Products: +Windows and +Catalogue
Price: £9.95 each
Supplier: Panda Discs, Four Seasons, Tinkers Lane, Brewood, Staffordshire ST19 9DE.

A single file is the contents of the Beeb's memory – approximately some 3000 characters – and +Catalogue can handle up to 25 files. A file is simply a list of data and, unlike a fully-fledged database, there are no individual records or data fields.

The files can be searched using keywords. Commonly used keywords can be held in a Keyword Index file to help speed up keyword entry. The program can search for up to five keywords at once, although as there is no distinction between records there are no AND or OR searches. All searches are case sensitive and there is a wild card facility.

The function keys are used to move around the text and view the files. If you find a suitable entry you can send it to a printer.

No sorting

+Catalogue does what it sets out to do well. But it doesn't set out to do very much. There is no sort function and the lack of any kind of data organisation limits the usefulness of the program. One possibility, however, is to search for required items and print them one by one.

The manual says +Catalogue could be used for storing names and addresses, video titles, slides, record collections and books.

It also suggests that teachers may find it useful for storing and searching National Curriculum attainment targets.

Yes it could, but as it lacks any kind of sort function, the practicalities of storing such data in it are limited. I can't think of any collection of data which would not benefit from being stored in some kind of order, alphabetical or otherwise. It would have been useful if some sample data had been included to help you find your way around the program.

Although it's easy to use, the manual dives in at the middle rather than the beginning, before explaining how to use the program. But read the manual through and you'll have no problems.

However, the program is a cataloguing system and doesn't profess to be a database. If that suits your purpose you won't find a program easier to use.

Summing up

Both programs are very easy to use although +Catalogue's usefulness is reduced by its limited *database* implementation.

+Windows is particularly straightforward – useful utility if you have not already mastered Wordwise Plus' basic print commands.

+Windows at your fingertips

+Windows was originally written for students with special needs and can be controlled with only one finger. It inserts green embedded commands into your text to help format and print it out.

The routines load into segments one to five and the program uses a series of neat pull-down menus. There are 10 files on the disc so DFS users will be well advised to use a boot disc to save file space.

The menus are accessed by pressing Shift and a function key. By activating Shift Lock you can use the program with one finger. The down cursor key cycles through the menu options and Return confirms one.

Menu one inserts justification, page number, page and line length, left margin and top spacing instructions, and draft or final quality print commands. After insertion, the cursor moves to the end of the text so you can insert a Begin Page instruction if you wish.

Menu two houses Centre, Underline On and Underline Off commands and Menu three holds Bold and Italics On and Off commands. After using one of the On commands, the next time you access the menu the cursor will be on the corresponding Off command. There's thoughtful...

Menu four contains Line Space, Indent, Temporary Indent and Cancel Indents commands. The Line Space and Indents take a numeric parameter. You enter this then carry on typing as usual and the commands appears at the cursor position – another useful touch.

Menu five lets you change the commands used for printing by Menu one. Changes made here are temporary but you can make them permanent by editing the +Format disc file. This contains WPPL instructions, but it's easy to follow and edit.

The program uses uses OPS – Output Print Sequence – and RPS – Redefine Print Sequence – commands to define the print codes. While digging about in the files you can also change the Double Strike and Underline codes should you not have an Epson-compatible printer. In fact, you can redefine all the sequences to another set of printer codes, although you will need some knowledge of your printer's escape code sequences.

The Italics commands can be completely redefined to produce a different effect altogether and the name of this appears in the menu.

The Output Print Sequences can be saved to disc using the SAVE PARAMS command – this is a feature of WPPL – which allows you to load the settings back into Wordwise Plus, even on a computer which doesn't have +Windows.

+Windows works well although the range of its facilities is somewhat limited in comparison with some other Wordwise Plus printing utilities. If you want to expand Wordwise Plus' facilities I can highly recommend Wordwise Plus II.

However, it you don't wish to go in that direction or are looking for a utility for users with special needs, you'll find it easy to understand and a joy to use.

On the periphery

Don Turnbull brings a host of useful pieces of software and hardware into the limelight

Artistic licence

Product: Line Art Discs 1 and 2
Price: £5.50 (disc 1) £9 (disc 2) £12.50 (disc 1 and 2)
Supplier: Southern Printers, 47 Drake Road, Willesborough, Ashford, Kent TN24 0UZ.
Tel: 0233 633919
Requirements: Risc OS

Product: Borders
Price: £15
Supplier: Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX.
Tel: 0442 63933
Requirements: Impression II, Risc OS

Product: Ethnic Borders
Price: £10
Supplier: 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353
Requirements: Poster, Risc OS

Product: Trace
Price: £5.99
Supplier: David Pilling, PO Box 22, Thornton Cleveleys, Blackpool FY5 1LR.
Requirements: Risc OS

FLICK through any magazine, for any computer and you'll see adverts for clip art. Of varying quality and prices, there is enough around to make even the most unartistic person produce masterpieces of design.

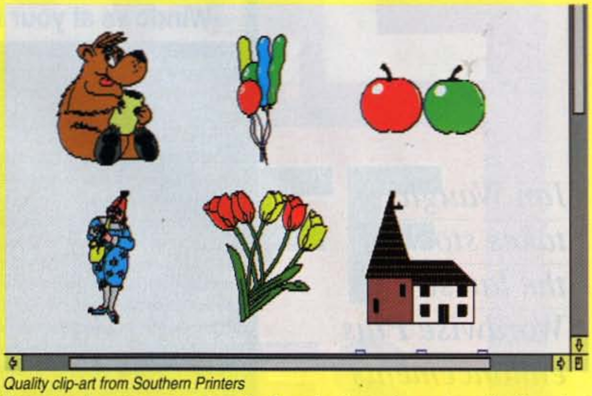
Recently two discs from Southern Printers arrived full of beautiful, Drawfile clip art in 256 colours which you can use as it is, or adapt and incorporate into your own displays, drawings, posters and the like.

Disc 1 includes four files on the topics of animals, people, transport and others.

The animals range from a cute bear to a disgruntled looking pig. In the people file are eight costumed characters including a clown and a cowboy, while the transport directory has some very nicely drawn cars, bikes and a traction engine.

The fourth disc contains a couple of Union Jacks, a carriage clock, a bunch of balloons, ivy and tulips plus two scrolls and a look sign, 37 pictures in total.

Southern's second disc is archived into three files: A-F, G-O and P-Z. These hold a wide collection of all sorts of drawings from a town cryer to the Eiffel tower. A total of 40 drawings, and as with disc 1 they are all Draw files and can be easily moved from one document to another.



Quality clip-art from Southern Printers

More application specific are two border packs from Computer Concepts and 4Mation. Designed to work with Impression, Borders is a selection of artwork designed by Impression users and packaged together. There are eight files in total giving you over 100 different types of border to choose from. You'll need at least version 2.14 of Impression, so check this first.

To use the borders themselves is very simple. Access the frame menu and select border setup. You are supplied with 10 simple borders as standard, but to add any or all of this collection simply drag the file you want from the floppy disc to the large arrow in the border setup window.

To apply the border select Alter frame and the View window. You can now add the border to some or all of

Fontastic

Design Concept have a large array of fonts which doesn't seem to stop expanding. Their range of exotic and original outline fonts are quite specialised.

I have added Copperplate, Trust and Ainslie to my collection recently, but having a penchant for fancy fonts, Acropolis and Goffik have caught my eye too.

!Italic is a new utility which is very easy to use. If you don't have an italic/oblique form of a font you can rectify this with !Italic. The options menu will let you set your edited font's suffix as well as the angle of slope/gradient. Access your fonts directory and take the font you want on to the icon bar icon. The font will then be titled. Not a true italicisation as the font isn't redesigned, but it is a quick and easy way to get a new look. To use the font, simply close down your wordprocessor or other applications, reload and off you go. !Italic is very simple to use indeed and a new version is planned which will cover all forms of transformation on outline fonts.

Product: !Italic
Price: £10 (plus £2 carriage per order)
Supplier: Design Concept, 30 South Oswald Road, Edinburgh EH9 2HG.
Tel: 031-668 4518
Requirements: Risc OS

Colour
SCREENMAC

the sides as well as change the background colour as you would normally.

Some borders need wider frames than others and some require a great deal of ram. Luckily the manual gives you some idea of the frame requirements and a number of asterisks give the memory requirements – one asterisk for less than 500 bytes with four for borders which need more than 4k.

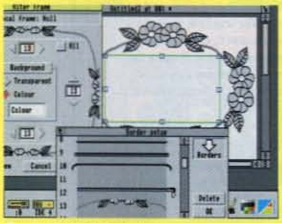
One particularly special selection is designed by David Snell and Graham Wicks. It is available in the Families directory and you are encouraged to mix and match. For instance the Dubl-Fam file contains eight files which you can choose to customise your own frame – very nice.

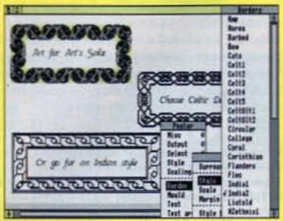
Borders are an integral part of Poster from 4Mation too. Ethnic Borders has been compiled by Wayne Croll from New Zealand.

His country has supplied some of the creations, too, with NZethnic's origins in Maori art. In particular NZEthnic4 follows an ancient rock drawing which depicts an embryonic Kiwi in its egg.

European art is also well represented with workings on the illuminations in the Book of Kells and The Book of Hours among others.

To introduce your new borders is again a simple matter – which is just as well as there are no instructions with the package. Simply load Poster, and by clicking on the new borders disc this will become the current borders directory with 43 designs. Simple to use with a beautiful array of Drawfiles.


Borders for Impression...



... and Poster

Tracing

Staying on the clip art front, you'll also find quite a lot of artwork available as sprite files. Also an easy way to obtain pictures is by scanning and these also result in sprite files.

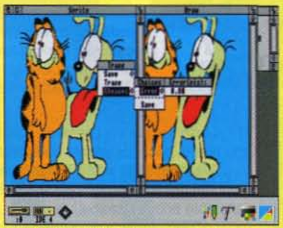
However, sprites have disadvantages over line art. Most are larger than their line art counterparts and they lose quality when you make them bigger.

To overcome these problems you could make your sprite into a Draw file. Midnight Graphics' Tracer program – which was reviewed in the May 1991 issue of *The Micro User* – does this or you could opt for David Pilling's Trace.

Significantly cheaper than Midnight's Tracer, Trace is also very easy to use. Loading the program via the icon bar presents you with two empty windows, one entitled Sprite, the other Draw. Drag your sprite into the appropriate window and call up the menu.

Enter the choices sub-menu and select Error. This is where you can set the average error for each pixel to be traced – the lower the number the lower the error. The default is 0.08 and the save option in Choices will save your configuration as the default. However, choose too small an error number and the program will reproduce the individual pixels making for larger files.

Tracing does take a considerable time, but once finished your Draw window will show the results which you can then save in the normal manner. Some sprites don't trace too successfully if they are very detailed or use dithering, but you can always edit them in !Paint before or !Draw afterwards. That is all there is to it and colour sprites are traced exactly the same as mono ones, with the minimum of fuss.



David Pillings' Trace at work

Apples and Acorns

HCI ARE a company well known for their connectivity products – especially between Apple Macintosh and Acorn machines. Screen>>Mac transferred pictures directly to the BBC or Archimedes and Macintosh and now there is a colour version available.

Macintoshes are used mostly in professional DTP work but as the Archimedes starts to make inroads into the same marketplace, it is preferable that they learn to talk to each other. There are software solutions when it comes to sprite and text files, but some graphics stubbornly refuse to communicate.

Colour Screen>>Mac consists of a lead, manual and disc and we have opted for the Archimedes version for this test, though a BBC version is available. As both the Archimedes and Macintosh have nice user interfaces setting up the system is quite easy.

The manual is straightforward with a good selection of illustrations and troubleshooting tips. A step-by-step guide takes you through the transfer and though it is helpful if you are familiar with the Macintosh it's not essential and the manual doesn't assume a great deal of knowledge.

However, I did find the transfer extremely slow and as you can only transfer one picture at a time the process can be time consuming.

There is a software alternative for Archimedes sprite files. The Tiff picture format is understood by major Mac packages. Unfortunately Tiff files are usually three times the size of the original and very large sprite files have to be archived in PC format then accessed via Apple File Exchange or DosMounter on the Mac.

Incidentally !MakeTiff for the Archimedes – a PD utility written by John Kortink – uses a Tiff palette which is no longer in the Tiff standard but keeps the size down. However, Adobe PhotoShop and Quark Xpress on the Mac will both accept this *illegal* standard.

But if you're not using these, Colour Screen>>Mac will do the job for you and for BBC B dumps there is no alternative. In addition this simple-to-use package shows you how to edit colours on the Macintosh as well as giving a lot of useful information on memory and resolution.

Product: Colour Screen>>Mac
Price: £95
Supplier: Human Computer Interface,
25 City Road, Cambridge CB1 1DP.
Tel: 0223 314934
Requirements: Risc OS/BBC B and Master

Lullaby-a-micro

SOME noises are more annoying than others. For many running venerable 300 or 400 series Archimedes, the cooling fan can be a source of continuous and irritating background noise.

The Whisper fan quietener provides a straightforward, simple-to-install solution while still protecting the computer against overheating. Plugged into interrupt the power supply to the fan motor, the unit samples the temperature in the computer and uses this information to regulate the voltage and fan speed in the 10 to 100 per cent of the normal unregulated operating speed.

Fitting really is the work of just a few minutes. The hardest part is taking off the casing. Find the fan – front left on the 310 I was tackling – and follow the power supply leads to the circuit board and unplug. Then attach the socketed lead from the fan which mates with the plug provided on the end of the Whisper circuit board.

My 310 has a Watford hard drive and the flange supporting this did prevent the removal of the power supply socket from the circuit board. Not wishing to remove the hard disc I was pleased to discover that by loosening the retaining screws I was able to raise it enough. Two temperature sensors are provided and ICS give clear advice for their positioning.

Both can be attached to the disc drive or – in the case of low power consumption drives of less than 6 watts – one sensor can be attached to the power supply unit.

One minor beef is that the amount of blu-tac supplied to fix the sensors in place is a bit miserly. Twice as much is needed to ensure firm positioning.

The instructions are clear and easy to follow. To their credit ICS also remind purchasers to check the state of the fan filter while the lid is off. This is excellent advice and I took the opportunity to examine my well clogged filter. Careful application of the vacuum cleaner hose – after removing the filter from the fan – worked wonders.

All in all, I would say that this inexpensive unit makes a useful contribution to achieving a quieter working – or playing – environment.

Product: Whisper Fan Quietener
Price: £15
Supplier: Ian Copestake Software,
10 Frost Drive, Wirral, Merseyside
L61 4XL.
Tel: 051-632 1234
Requirements: Risc OS

TOPO *LOGO* KA?

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Books for the Acorn Archimedes

DESKTOP PUBLISHING ON THE ARCHIMEDES
DTP for All

Bruce Goatly, Head of Publishing at Britain's Leading Scientific Society, London, UK

The Acorn Archimedes is the type of fast and powerful machine that is essential for DTP work. Bruce Goatly's book explains the fundamentals of DTP - the terminology and the technology. The advantages of the Acorn RISC operating systems are described together with how to set up the Archimedes in an optimal manner for DTP and how to choose the optional extras needed. The 'Impression' DTP package is used to exemplify a leading-edge system for the Archimedes although the author also uses 'Acorn DTP' and 'Ovation' throughout.

This book is prepared on the Archimedes, which makes the author well placed to describe all the tricks of the trade for producing text and illustrations as well as the problems of managing large documents.

185058 248 3   December 1991   294pp   £12.95/$26.95   Published by Sigma Press, UK.

PROGRAMMING IN ANSI STANDARD C

Gordon Horsington, Gwent, Wales, UK

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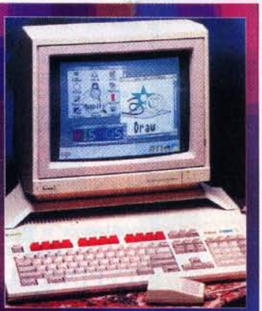

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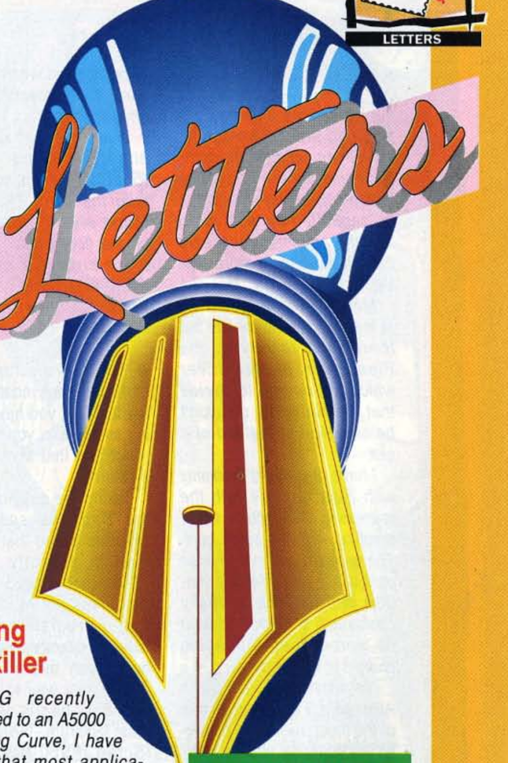

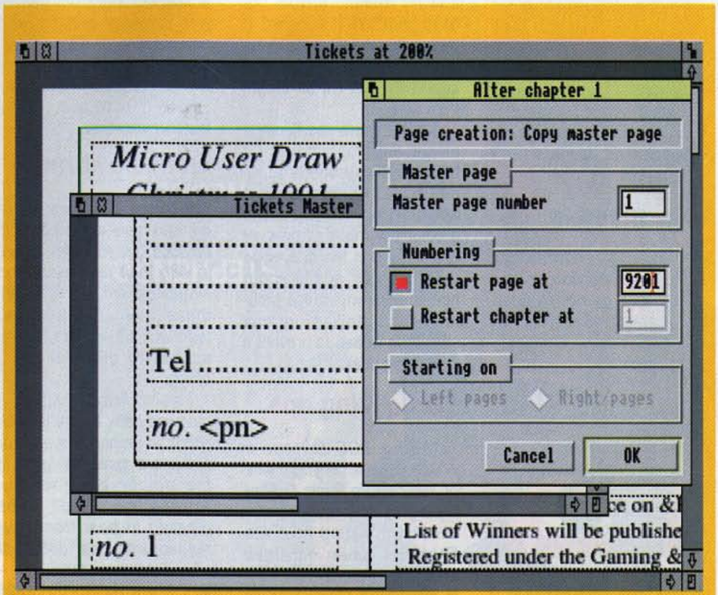
Tickets at 200%

Alter chapter 1

Page creation: Copy master page

Master page

Master page number 1

Numbering

☒ Restart page at 9201

☐ Restart chapter at 1

Starting on

◇ Left pages ◇ Right pages

Cancel OK

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Tickets Master

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Getting to grips with raffles

PRIZE letter

I WAS very interested to read the article about producing consecutively numbered tickets in the February issue of The Micro User. *However, Steve Turnbull has made the process far more complicated and time-consuming than is really necessary.*

I have been producing numbered tickets for some time now, using a method which doesn't require Impulse or the Business Supplement.

- *Create a new Master Page of the size you want your tickets to be. For the raffle tickets used in the article, this should be 148.5mm wide by 70mm deep with a 5mm margin.*
- *Scroll down the list of Master Pages until you come to the one you have just created – if this document is only going to be used for tickets simply delete the others. Then design your tickets on the Master Page itself.*
- *Once satisfied with the design, place a new frame large enough to contain the ticket numbers on the right-hand side of the ticket. You must now use Impression's Insert facility to insert the current page number. Go to the Misc menu option and select Insert Page Number from the Insert sub-menu. Copy the resulting frame to the counterfoil area.*
- *Close the Master Page. If you have removed the other Master Pages, you will see your ticket, complete with the number 1 in the relevant places. If you have retained the other Master Pages, you must Alter Chapter to the number of your ticket chapter.*
- *Press Control+F7 then Return. This will create a new page containing your ticket numbered 2. It is now a simple matter to produce as many numbered tickets as you like by repeatedly pressing Control+F7 and Return until you have the required quantity.*
- *Call up Print. For the tickets we have just designed, the settings should be: All, copies one, scale 100 per cent, sideways and fit lots. Access the setup window and choose the ignore page border option. Now print.*

The results should be tickets which are automatically correctly aligned without any tedious renumbering/editing of !Importer commands. – **Mark Wiggin, Newport, Shropshire.**

● Many years ago someone sent us a superb program which created 40/80 track discs using switchable drives – then someone in the office pointed out that you could do exactly the same thing just using format commands.

This is just the same, it's a very nice simple method, but if you need to print more tickets at a later date, do remember to Alter Chapter and adjust the page number start so you don't end up with the same numbered tickets.

Which method you use really depends on how many tickets you are planning to produce. For a thousand tickets the Control+F7 and Return method could be enhanced by adding a flowing frame on the master page. Go back to the normal screen, click in the flowing frame to get the caret then hold down Control+G and wait.

You will start to produce page after page on auto-repeat because Control+G is the *go to next frame* command.

Losing the killer

HAVING recently upgraded to an A5000 Learning Curve, I have found that most applications run quite happily on Risc OS 3 – but a few do not.

In particular, !VKiller supplied on the monthly disc gives the error message Address exception at 038989C0 at line 13230. *Do you have any suggestions which could make it work or will the whole program have to be modified?* – **D.F. Marshall, Hale, Cheshire.**

● At present !VKiller won't work on the A5000 because it had to do something naughty – in a programming sense – in order to provide protection against one of the viruses it recognises.

Acorn have now provided the command that !VKiller needed so a new version should be available soon for Risc OS 3.

Pipedream

JOHN Allen's review of PipeDream 4 in the February issue mentioned a minor drawback in respect of reformatting highlighted text. This arises from two features present in PipeDream and its associated printer drivers.

When text is reformatted, PipeDream takes a black line as a delimiter for a paragraph and if the option Wrap is on – as it must be for reformatting – then the existing lines will wrap back so that the new lines can wrap at the required length.

The printer drivers supplied with PipeDream have certain highlights – underline being one – which switch off at the end of the line, the highlight being a toggle switch. The underlined text in line two clearly clearly had highlights only at the beginning and end of the underlined portion. This meant that wrap back during reformatting caused these to appear different lines, leading to the problem in the new line two.

The solution is to highlight each word in the phrase so it is underlined separately, leav-

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ing no spaces between the highlights and the word. Now PipeDream will treat the highlights and the word as a distinct entity, so the word won't be separated by word wrap and the problem disappears though albeit with more typing.

Most highlights switch off at the end of a slot or line but there is a facility in the PipeDream printer driver which allows you to decide that the highlights shouldn't be cancelled at the end of a slot.

I have also found problems with PipeDream 4 with the redrawing of Windows when scrolling with the scroll bars. The problem appears to arise particularly is a directory window, for instance, partially obscures the window. It is at its worse when a penguin chart is in the window.

Nevertheless, as John Allen says, PipeDream is one of the most useful and powerful applications and its flexibility allows it to be tailored to suit the majority of needs. – **A.W. Kitchenside, Addlestone, Surrey.**

Pardon?

MY SON and I have an A310 which has 4Mb of ram and a Watford 45Mb IDE hard disc. We would like to know where we can find out what all the error messages mean, in particular Bad free space map *and* System resources not found.

We often get a disc error 16 which clears when the drive is dismounted and sometimes a program copied from floppy asks for that disc to be inserted when run from hard disc. Occasionally Bad drive appears.

I have not been successful either in using the PC Emulator which comes up with the error ***!Run2 not found*** *when I know that it is on the floppy disc. Apart for these problems all is well. Can you help?* – **R.J. Record, Twickenham, Middlesex**

● There are a number of problems here mostly due to the fact that you have two filing systems in your machine – not that that should cause problems.

Taking the easy ones first, the *Bad free space map* refers to a disc that isn't formatted properly or has become corrupted. *System resources not found* means that a program needs the !System directory but it hasn't been "seen" by the Filer yet.

The best way to organise your hard disc is as follows. Your !System, !Fonts – and !Scrap if you have one – directories should be in the top level of your hard disc. Load !Edit and create an Obey file called !boot containing this:

```
idefs::4.!System.!boot
idefs::4.!Fonts.!boot
Desktop
```

Save this obey file into the top level of the hard disc as well. Press F12 and enter the following commands:

```
Configure Boot
Configure FileSystem IDEFS
Configure Drive 4
```

Now when you switch on your machine it will automatically default to your IDEFS and the System and Fonts will be identified in advance.

Make it snappy

MY SON has a four game disc called Classic Arcade Games. When he tries to load the first game, Snapman he gets the message:

```
SET PAGE$1900
```

Could you explain what procedure to follow to get into this game? Many thanks for your help. – **A.M. Stewart, Westby, Lancashire.**

● The message is a little confusing but its intent is clear. Before using the disc enter these lines:

```
PAGE=&1900
*EXEC !Boot
```

You may well find that a lot of your other problems disappear now, but not all. When you run some commercial games and PD programs you may need to press F12 and type:

```
dir adfs::0.$
```

Before they will work, be sure to press F12 and enter:

```
dir idefs::4.$
```

if it returns to the Desktop without you needing to do a Control+Reset.

With software that asks for the floppy to be inserted even when you've run it from the hard disc, there are two situations. Press Control+Reset and try running it from the hard disc. If it's cured it means that the !Run file in the application has been written incorrectly but it'll be alright from now on.

If it still wants the floppy it means the program has not been written properly at all and you'll just have to run it with the floppy loaded. This is a complete waste of time, of course, and in the next issue there'll be an article about how to cope with these problems and how programs should be written to prevent it happening at all.

Basic hang ups

I HAVE a BBC B Issue 3 which shows a copyright date of 1981 on its Basic I. After typing in and running the checksum listing from the February issue, my Beeb responded with Syntax error *at line 440. It seems that the Equs operation is not recognised by the older version of Basic.*

Can you supply replacement lines for 440 and 460 if the rest of the program with work on my machine or an alternative listing if there is more which Basic I will object to? – **Anthony Hilton, Tinshill, Leeds.**

● The program will work fine with the following amendments:

```
315 DEF FNs(s$)$P%=s$:P%=P%+LE
Ns$:=L%
440 OPT FNs("Escape"):BRK
460 OPT FNs("Bad program"):BRK
```

Oops

WE WERE very pleased – in fact extremely pleased, if not delighted – with Steve Bruntlett's review of Chameleon in the February issue of The Micro User.

However, he wrote: The files objects need to be ungrouped before you load them in, otherwise you won't be able to modify individual objects. *But one of Chameleon's main features is that you do not have to ungroup objects in order to make colour changes. I hate to think of Steve and others wasting hours performing unnecessary ungrouping and regrouping operations. We are also currently working on a new version of Chameleon, which will allow a variety of different graduated fills to be applied to draw files.* – **Mike Matson, 4Mation.**

Genesis library

THERE must be many teachers who have worked hard to produce Genesis files to link in with their topic work and would be willing to make these available to other teachers, as well as having access to other people's efforts.

I would like to suggest a resource bank be set up with either an exchange system or perhaps a small fee to go to the author as a royalty. Anyone interested? I'd be pleased to hear from your readers with clear details of what they have available. – **Mrs Chris de Cordova, 35 Thornton Road, Whitehaven, Cumbria CA28 6UW.**

Using Mini Office

I USE my BBC B mainly with Mini Office II for correspondence, records, mailing and so on in connection with a voluntary organisation. Though this set up satisfies most of my needs, the very small amount of usable memory – less than 6k when word processing – is a serious handicap.

I would appreciate your advice as to the options and your recommendations for expanding the memory. Alternatively, in view of the advances in computer technology and the drop in prices since the BBC Micro was developed would I be better to upgrade to an Archimedes or even a PC?

I am also experiencing one problem with Mini Office II as part way through the text when the cursor reaches an end of a line on the screen, it jumps to the top of the screen and can only be brought back to the next line of text on the screen by pressing the right hand cursor key – this happens in 40 character mode.

If you don't retrieve the cursor and continue typing this results in a misplacement of one of the letters. Is there

Lemmings mad

AFTER reading many reviews and talking to my Amiga and ST friends – and enemies – I have bought Lemmings.

There is one problem. Where is the two-player option? Surely Krisalis haven't just got rid of it? If so, will they be bringing out a game with two-player levels?

All of my Amiga friends say that the two-player option is brilliant, so it would be a great shame to miss out on the Archimedes. – **Chris Wood, Potters Bar, Herts.**

● When converting games from one machine to another, it is sometimes difficult to include all the features and retain the same standard of gameplay. Memory and disc requirements of different machines often mean that there must be changes.

The Archimedes version doesn't have the pretty animated opening sequence or the two-player option. Krisalis don't have any plans to release a two-player game, but new screens and challenges for Lemmings will be available in May for £19.95. If you thought the original game was difficult – you ain't seen nothing yet.

any way to overcome this? – **Bryan Edbrooke, Epson, Surrey.**

● The disc version of Mini Office II is rather restrictive. The rom-based version gave a lot more memory, but unfortunately it's no longer available. However, if you look through the classified adverts you may come across someone who no longer needs their copy.

If you want to keep your BBC Micro you could change to the Inter series from Computer Concepts – InterBase, InterWord and InterSheet, InterChart – which are available on rom, the last three come on one rom and InterBase on another, or even View Professional from AcornSoft.

You don't say how often you use the other aspects of Mini Office, but the multi-tasking nature of the Archimedes allows you to have different types of programs on screen at once. Or you could opt for a package which is similar to the Mini Office environment with Desktop Office from Minerva.

Archimedes programs are faster, usually easier to use and memory is much larger than that available for the BBC Micro. The Archimedes is much more flexible than PCs of the same price range, but before you change computers at all you should look long and hard at what you want to do now and in 18 months time. The cheapest option may be restrictive.

Concerning the problems you're having with the word processing aspect of Mini Office. The technical department of Europress Software hadn't heard of this problem before. If you return your discs to them they will upgrade them to the latest version. If the error continues, I should look at what else you have in your machine which could be interfering with the program.

More help please

I HAVE just started to subscribe to The Micro User *and I find the magazine full of lots of things to spend money on. However, I must confess that I am a user not a programmer. I stopped writing programs when I got to the BBC Master 128 stage and with my A3000 I am way out of my depth.*

The point of the letter, is that the free discs supplied with the magazine are no doubt full of fascinating things and I have worked out how to use some of them. But so far I cannot understand how to load the !Host games. I can load !Host but not the promised games. – **David Stone, Kibworth Beauchamp, Leicester.**

● To use the 8-bit BBC Micro programs on your A3000 it's best to unpack them on to a ram disc first. Use the Count option on the Filer menu to find out the size of the directory then create a ram disc which is a bit bigger then the directory size.

Use *Select all* and drag the files into the ram disc window, press F12 and type:

```
*ram
```

Now run the !65Host and enter the command:

```
*run !boot
```

and the menu program will run. Instead of the ram command you could run the programs straight out of the archive by opening up the Listings archive so its window appears on the screen. Then enter:

```
*arcfs#Listings
*dir arcfs#Listings.8bit
```

instead of the ram command, then proceed as above.

Laser Wars

WE were not impressed with your article Laser Wars *in your February issue which was about how to choose a laser printer. Direct drive technology was hardly given a mention – curious when considering the huge benefits in speed and cost, with no hidden extras such as fonts and memory upgrades needed for these types of printer.*

Archimedes users are fortunate in having access to this technology and yet only one of the direct drive laser printers on the market was given a look in.

Obviously we were miffed that Calligraph's ArcServers and ArcLasers were not included in the review – watch this space for exciting new developments. – **Kechil Kirkham, Calligraph, 53 Panton Street, Cambridge.**

Book-wise

READING through a copy of The Micro User, *I saw a book on BBC Basic by Mike Bibby. Is this book or any other publication available for the BBC Micro?* – **M.R. Tedstone, Walsall, West Midlands.**

● Getting Started in BBC Basic by Mike Bibby, is unfortunately no longer available from us. However, there are a good number of books relating to the BBC Micro still around – take a look at the Watford Electronics advert in this issue and most larger and education-based bookshops.

Hang up error in ViewSpell

WHILE attempting to solve the software bug in my ViewSpell rom which causes the machine to hang up when trying to use the ADFS on the Master, I remembered a letter from David Davies in the August 1987 issue.

He commented that the problem lay at location &979E where a SEC instruction is required before the following SBC. I disassembled the rom and looked at a few locations in the relevant area. I have listed them below:

Sideways location	Assembly code	Machine code	Comments
&979C	LDA (&25),Y	B1 25	
&979E	STA &0E	85 06	SEC required between these
&97A0C	SBC &25	E5 26	two instructions
&97A2	STA (&25),Y	91 25	
&97A4	LDA £02	A9 02	

I have also looked at where the code finished and found that it was at &9FFF, although there is data much further on after this address. I resolved to use a JMP instruction to &A000, insert the amended code and JMP back to &97A4 – inserting the two instructions which are at &97A0 and &97A2 at the new JMP address. A NOP would then be needed at &97A2.

I downloaded the rom to user workspace – from &3000 – and allowing for the &5000 bytes difference between sideways ram and user ram, inserted the following:

Main ram	Sideways location	Assembly code	Machine code	Comments
&479C	&979C	LDA (&25),Y	B1 25	No change
&479E	&979E	STA &0E	85 06	No change
&47A0	&97A0	JMP &A000	4C 00 A0	New instruction
&47A2	&97A2	NOP	EA	New instruction
&47A4	&97A4	LDA £02	A9 02	No change
&5000	&A000	SEC	38	New instruction
&5001	&A001	SBC &26	E5 26	Formerly at &97A0
&5003	&A003	STA (&25),Y	91 25	Formerly at &97A2
&5003	&A005	JMP &97A4	4C A3 97	New instruction

I then saved the code back to the disc:

```
*SAVE spell 3000 +4000
```

and loaded it into sideways ram – location four:

```
*SRLOAD spell 8000 W Q
```

I was optimistic that the new code would solve the problem, but unfortunately I got more or less the same results as before the fix. Is there a flaw in my reasoning? Has anyone got any thoughts on the subject? – **H. L. Smith, Ipswich.**

● This is a very inventive solution and certainly looks right. Did you *Unplug the rom version of ViewSpell and then press Control+Break? Does any reader know any more details regarding this problem?

ALL programs printed in this magazine are exact reproductions of listings taken from running programs which have been thoroughly tested.

However, on the rare occasions when mistakes occur corrections are published as a matter of urgency.

Should you encounter error messages when you type in a program, they will almost certainly be the result of your own typing mistakes.

Unfortunately we cannot answer personal programming queries concerning these mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the letters pages.

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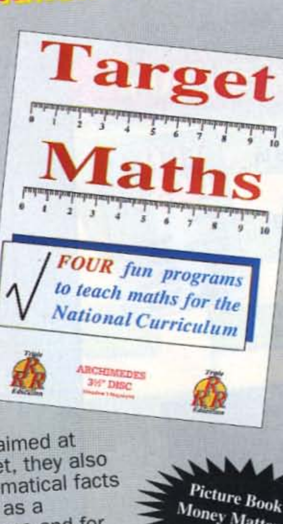
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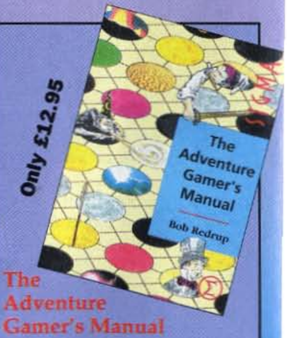

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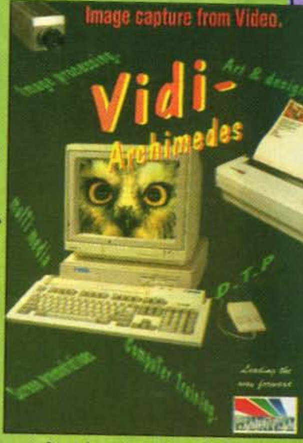

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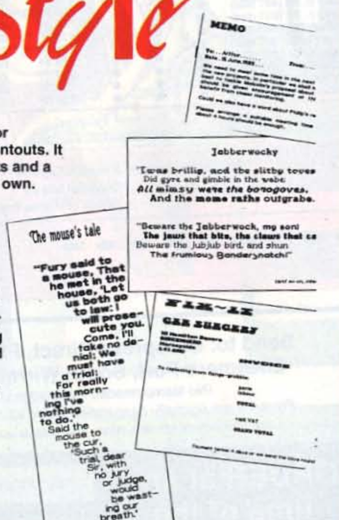

MEMO

Jabberwocky

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

"Beware the Jabberwock, my son!
The jaws that bite, the claws that ca
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

The mouse's tale

"Fury said to a mouse, That he met in the house, 'Let us both go to law: I will prosecute you. Come, I'll take no denial: We must have a trial: For really this morning I've nothing to do.' Said the mouse to the cur, 'Such a trial, dear Sir, with no jury or judge, would be wasting our breath.'

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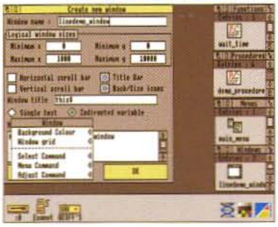
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Logical window sizes
Horizontal scroll bar
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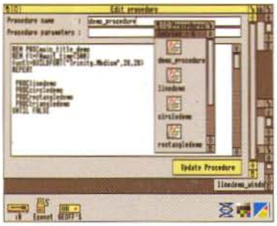
Back/Size icons
Single text
Indirected variable
Window
Background Colour
Window grid
Select Command
Menu Command
Adjust Command
OK
Functions
wait_time
Procedures
demo_procedure
Menus
main_menu
Windows
linedemo_window

Window name : linedemo_window

Minimum x : 0
Minimum y : 0
Maximum x : 1000
Maximum y : 10000

Window title : this$

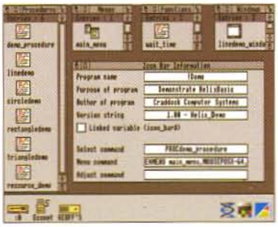
Window Editor


Edit procedure
Procedures
demo_procedure
linedemo
circledemo
rectangledemo
Update Procedure
linedemo_window

Procedure name : demo_procedure

Procedure parameters :

Procedure Editor


Procedures
demo_procedure
linedemo
circledemo
rectangledemo
triangledemo
Menus
main_menu
Functions
wait_time
Windows
linedemo_window
Icon Bar Information

Program name : !Demo

Purpose of program : Demonstrate HelixBasic

Author of program : Craddock Computer Systems

Version string : 1.00 - Helix_Demo

☐ Linked variable (icon_bar%)

Select command : PROCdemo_procedure

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HelixBasic Technical Details

HelixBasic is a fully Functional Basic V Language interpreter which relieves the programmer from the intricacies and programming over-heads of the desktop environment.

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All communications with the desktop are handled transparently to a HelixBasic application.

Windows & Menus

These can either be defined using the HelixEditor provided with HelixBasic or by using the commands built in to HelixBasic. Windows may be attached to other windows, to create a toolbox. If the window is defined with horizontal and vertical scroll bars these are automatically handled by HelixBasic. Menu entries may have procedures, Sub-menus, Sub-windows, Save boxes, Info boxes, Colour selector boxes or Font selector boxes linked to them. A variable may also be linked to a menu entry which allows that entry to be ticked and/or greyed by simply changing the variable.

Windows are automatically maintained so that no re-draw code is required within your own applications. Standard RISC-OS resources are supported, (draw-files, sprites, animations) these may be placed in a window with a single command. HelixBasic also supports Sampled sound and !Tracker music files.

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Distribution

A stand alone generator is provided with HelixBasic so that applications you create may be distributed without anyone being able to read the source, and there are no royalty payments to C.C.S.

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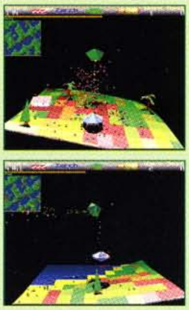

ZARCH

David Braben, co-author of ELITE, has harnessed the speed and performance of the ARCHIMEDES to create a programming masterpiece. Nerve-tingling gameplay over a massive 3-dimensional landscape, with realistic area shading and accurate perspectives. Totally addictive.

"*LANDER - which is supplied with the Acorn equipment - is fun; ZARCH is a game. ZARCH has a map, it has a string of bad guys and most importantly of all it has a series of challenges that develop as you play the game. And that's what gives it the quality possessed by the greatest games*" ...BBC Acorn User (Nov. 91)

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SPEECH!, HOSTAGES, MASTER BREAK and the REPTON games are also available for the BBC MICRO/MASTER and ELECTRON computers.
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